Formerly Used Defense Sites (FUDS) in Alaska - Planes, Barges, and Bears

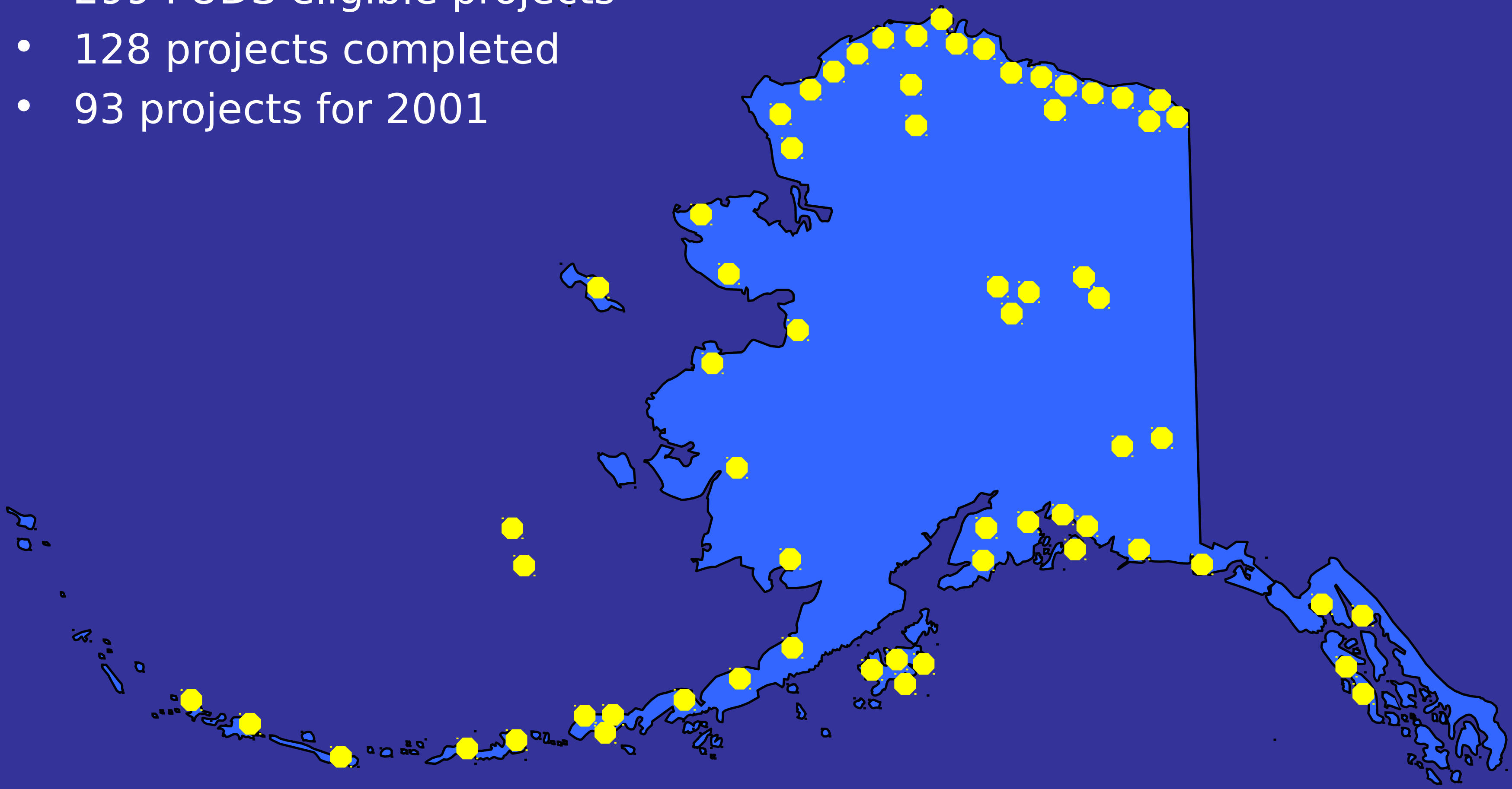
Sandra Kimbrell, Ph.D.
Paul Schneider, P.E.
Ron Broyles
Patrick Roth

U.S. Army Corps of Engineers - Alaska District

BUILDING AND PRESERVING ALASKA'S FUTURE

FUDS in Alaska

- 599 sites in Alaska
- 130 sites with defined FUDS eligible projects
- 299 FUDS eligible projects
- 128 projects completed
- 93 projects for 2001

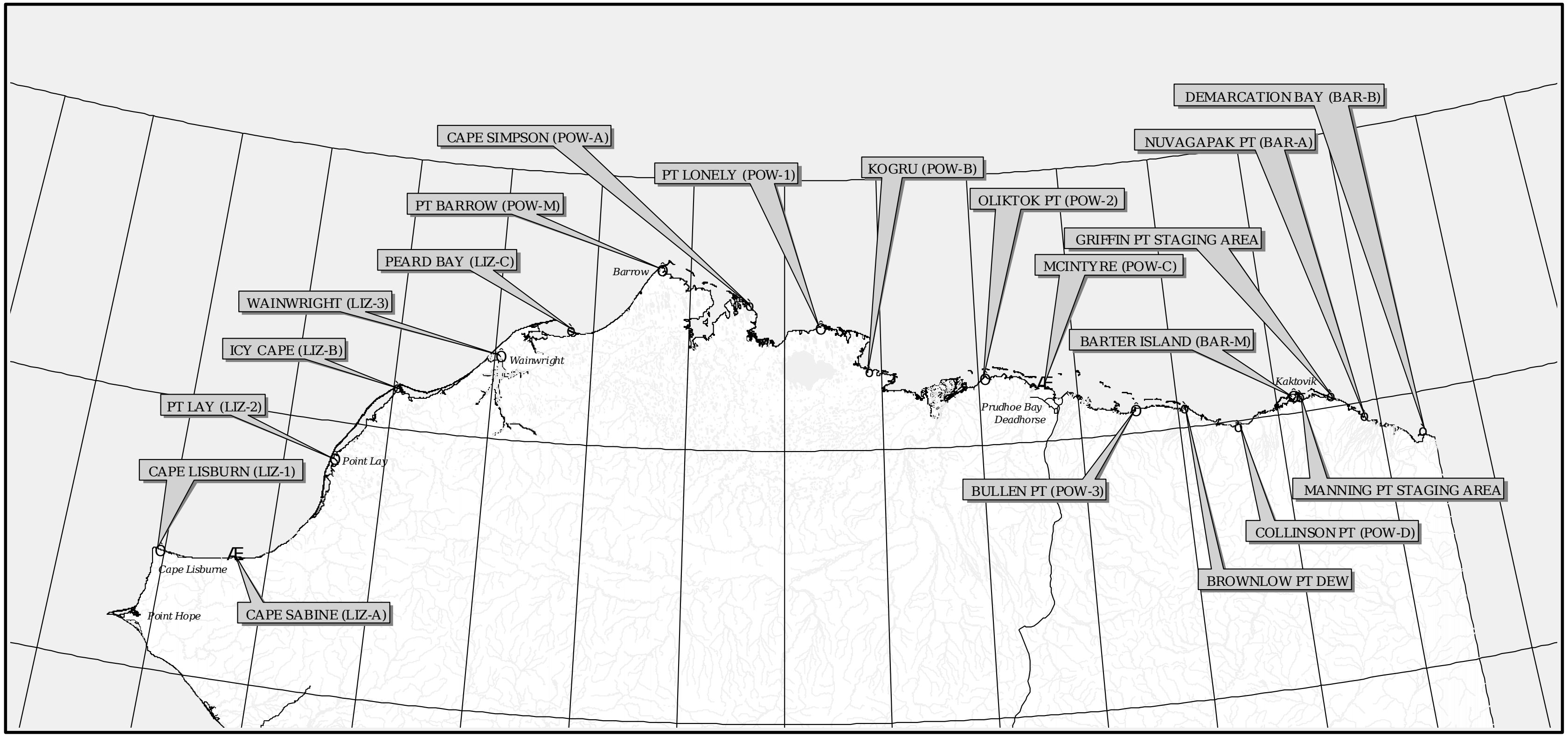


Distant Early Warning (DEW) Line System

- Constructed in 1950s to provide “over the top” warning
- Covers 3000 miles of northern coastline in Alaska and Canada
  from Cape Lisburne to Cape Dyer on Baffin Island
- Spaced approximately 50 miles apart
- 54 Stations (18 in Alaska)
  6 main, 20 auxiliary, 28 intermediate stations
- Construction started in 1953; became fully operational in 1957
- Cost for 1st phase estimated at $600 million
- Additional 6 sites constructed in the Aleutians
- 1959-1960 Extended across Greenland to Iceland.

DEW Line Air Defense System on the North Slope of Alaska

ALASKA DISTRICT


DEMARCATION BAY (BAR-B)
CAPE SIMPSON (POW-A)
NUVAGAPAK PT (BAR-A)
PT LONELY (POW-1)
KOGRU (POW-B)
PT BARROW (POW-M)
OLIKTOK PT (POW-2)
GRIFFIN PT STAGING AREA
PEARD BAY (LIZ-C)
MCINTYRE (POW-C)
Barrow
WAINWRIGHT (LIZ-3)
BARTER ISLAND (BAR-M)
Wainwright
ICY CAPE (LIZ-B)
Kaktovik
Prudhoe Bay
Deadhorse
PT LAY (LIZ-2)
Point Lay
CAPE LISBURNE (LIZ-1)
BULLEN PT (POW-3)
MANNING PT STAGING AREA
COLLINSON PT (POW-D)
Cape Lisburne
BROWNLOW PT DEW
Point Hope
CAPE SABINE (LIZ-A)

Barrow
Kaktovik
North Slope Borough
Nome
Fairbanks
Anchorage
Juneau

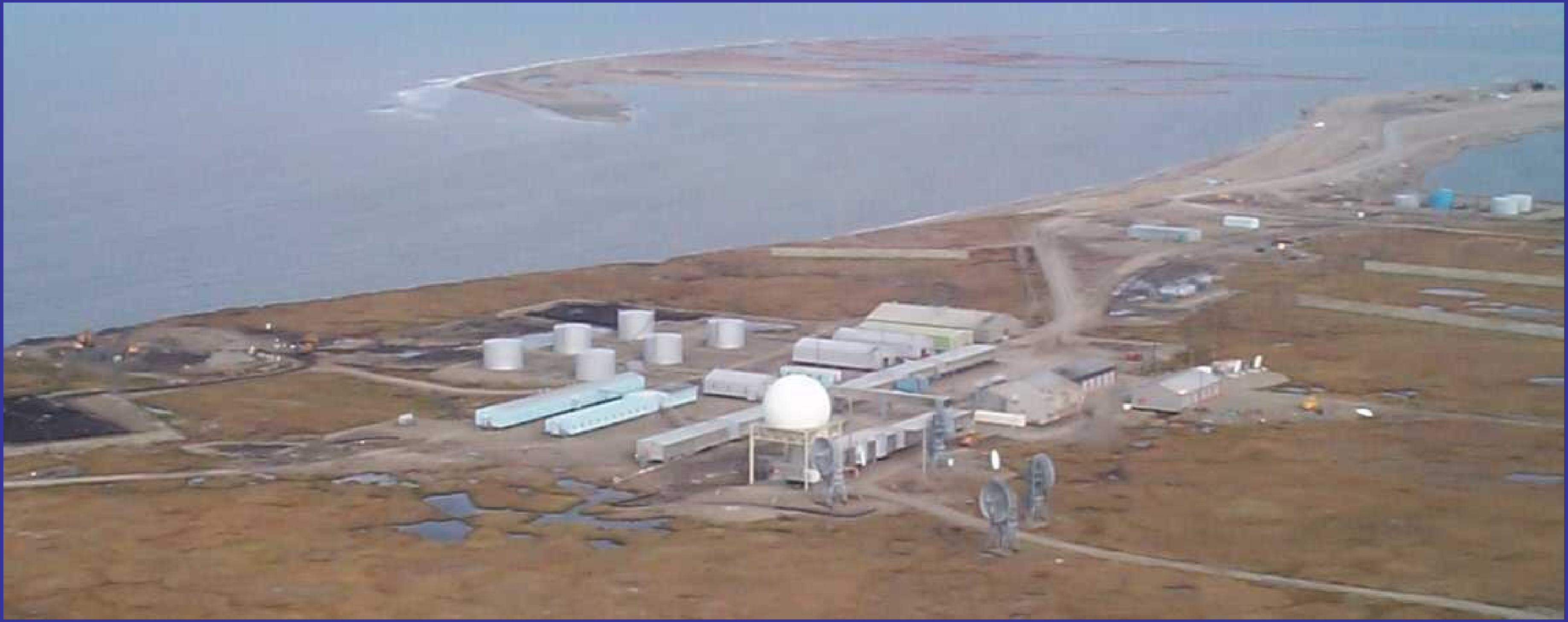
Area of Detail

ò FUDS Sites
Ô AF Sites
Æ Navy Sites
Communities
Roads
Rivers

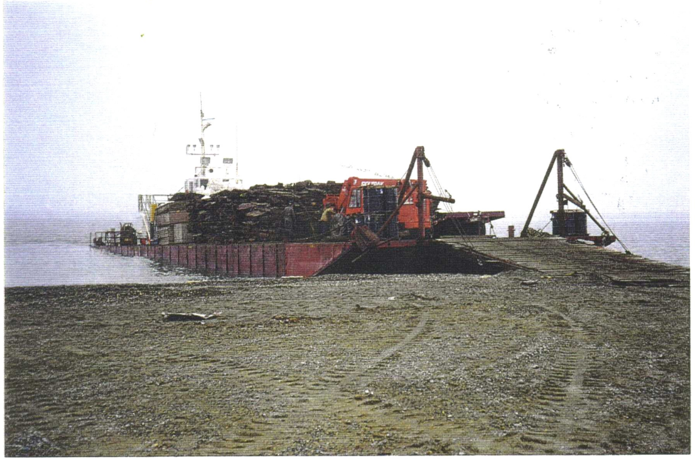
File: \\poagis\fudsgis\state\fudsloc\dew\aug99.apr

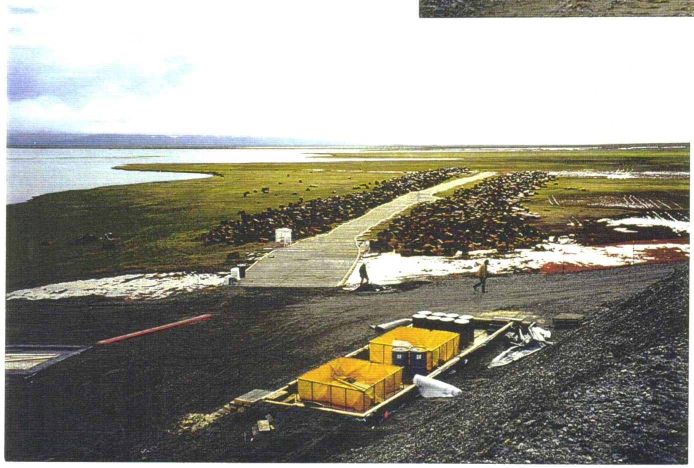
August 27, 1999

Barter Island DEW Line Station

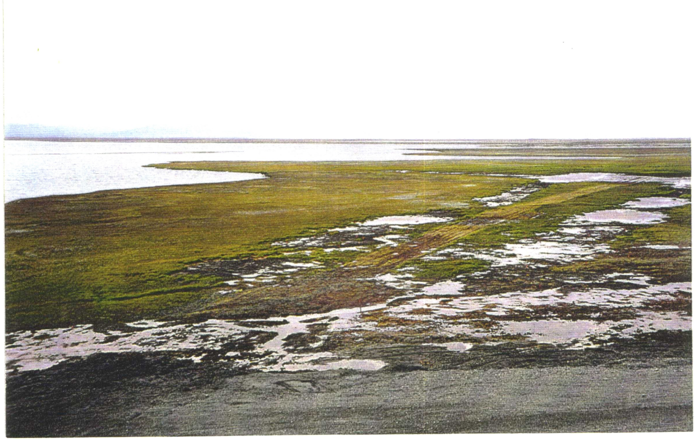


Barter Island drum removal



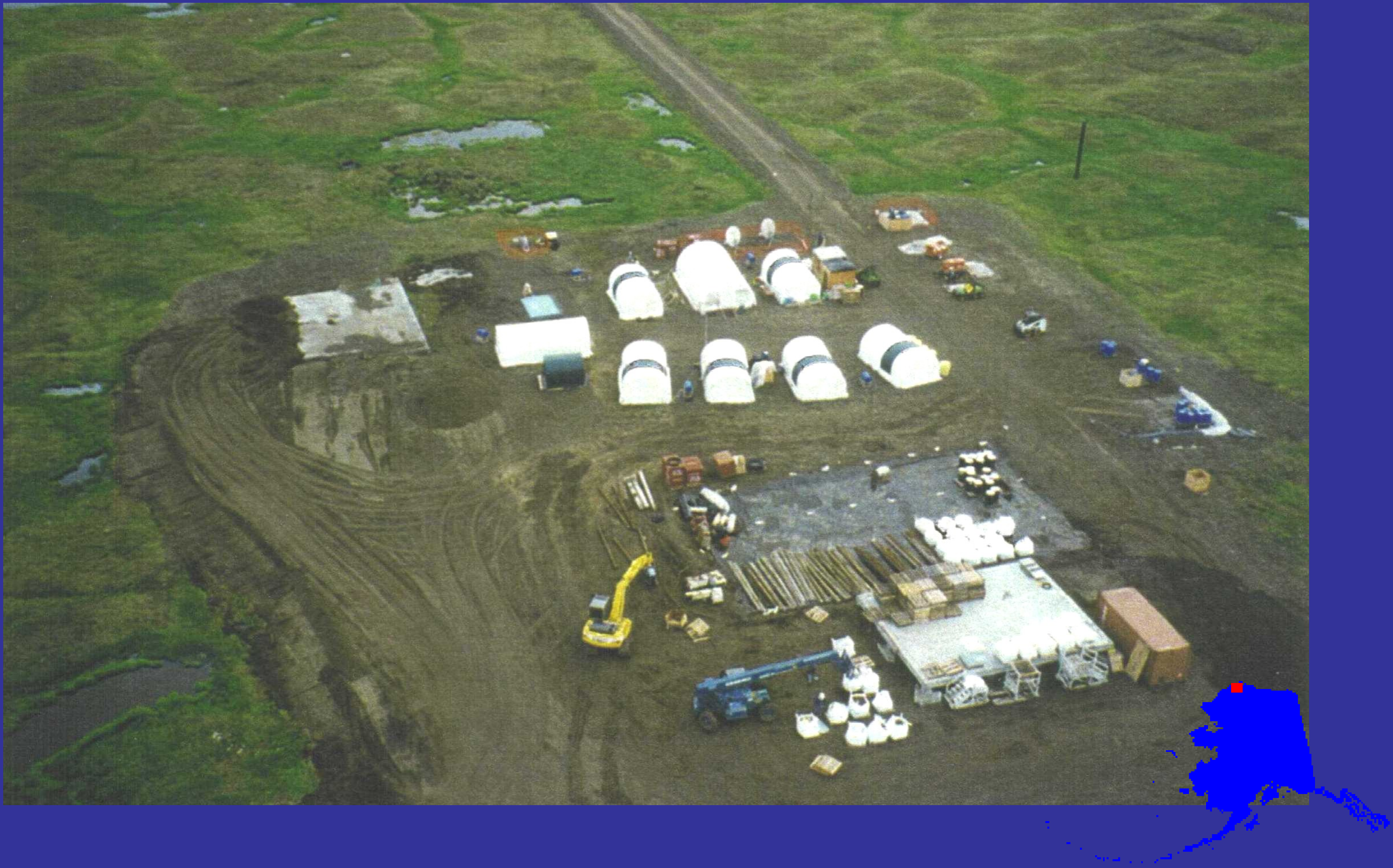


Photograph 3: July 6, 1998, 1741 hrs. View looking west at waste water accumulation area, wooden road, drum piles.

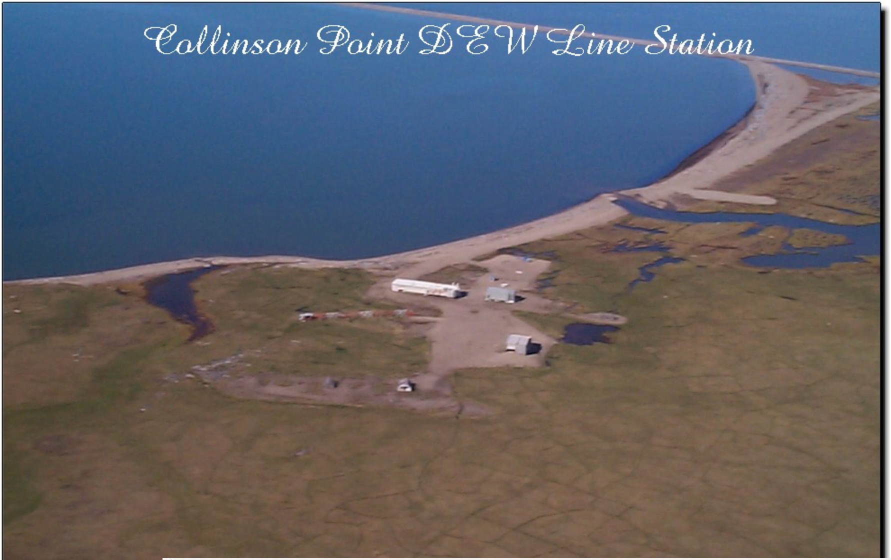


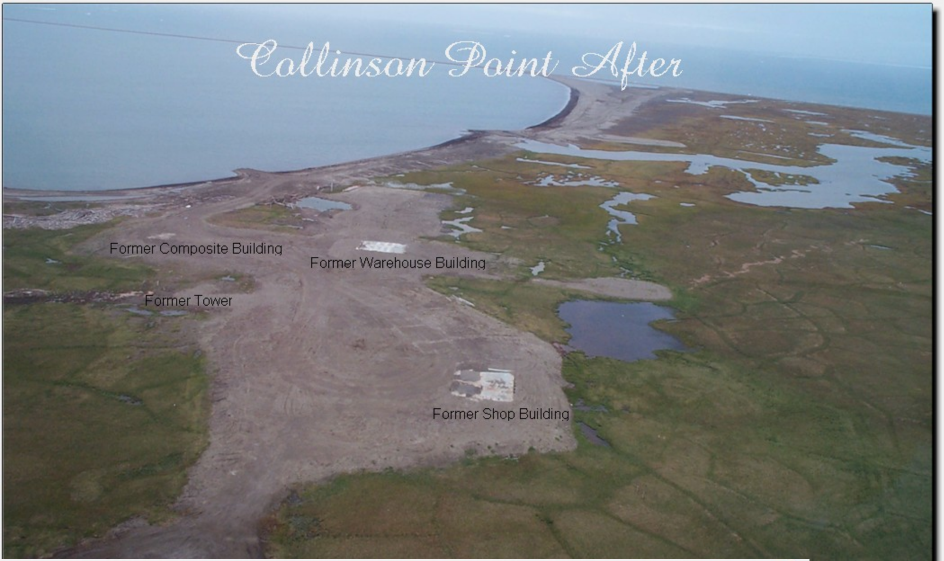
Photograph 20: August 24, 1998, 1300 hrs. View looking west at site after the completion of work activities and sample surveying.

Camp & staging area at Peard Bay DEW Line Station



Collinson Point DEW Line Station


Collinson Point DEW Line Station


Collinson Point After
Former Composite Building
Former Warehouse Building
Former Tower
Former Shop Building

2000

Aircraft Control and Warning System

- Series of radar sites throughout Alaska to provide warning of aircraft approaching Alaskan sites.

- Began with WWII and extended through 1958.

North East Cape St. Lawrence Island under snow

Sunrise at NE Cape St. Lawrence Island

ALASKA DISTRICT

Drums and dilapidated structures at NE Cape

St. Lawrence Island

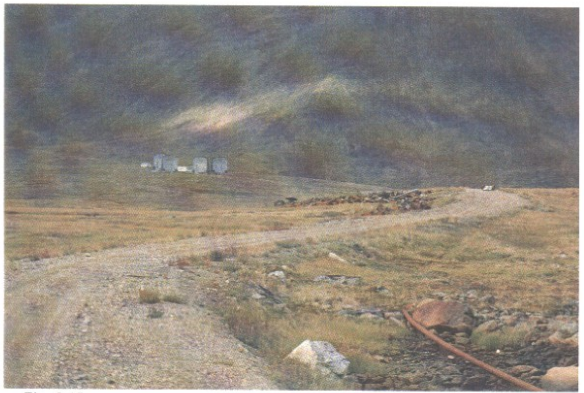


Fig. 3.15
Cargo Beach Road winding up towards White Alice site and base of Kangukhsam Mtn. at Northeast Cape on St. Lawrence Island, Alaska. Steel pipeline to right of road and steel drums to the left of the road. Viewed southerly on 9/4/93 by Larry Wilkinson, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

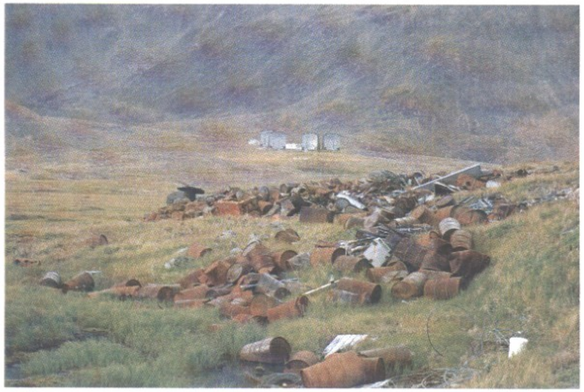


Fig. 3.16
Closer view of steel drums and other debris on the east side of Cargo Beach Road at Northeast Cape, St. Lawrence Island, Alaska. Photographed in southerly direction by Larry Wilkinson, Northwest EnviroService, Inc. on 9/4/93 on Contract DACA85-93-C-0048.

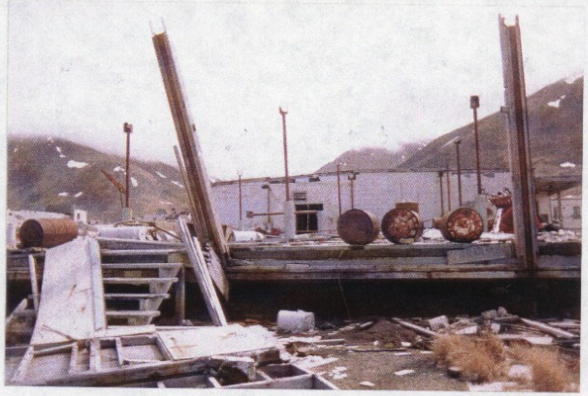


Fig. 3.25
Four (4) rusty drums containing soap on deck of General Supply Warehouse viewed southerly on 9/4/93 at Northeast Cape, St. Lawrence Island, Alaska. Photographed by Larry Wilkinson, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

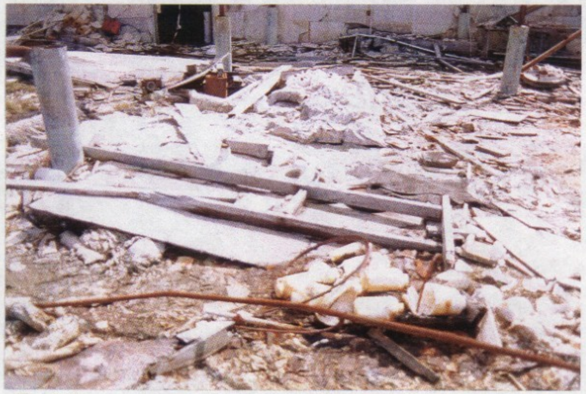
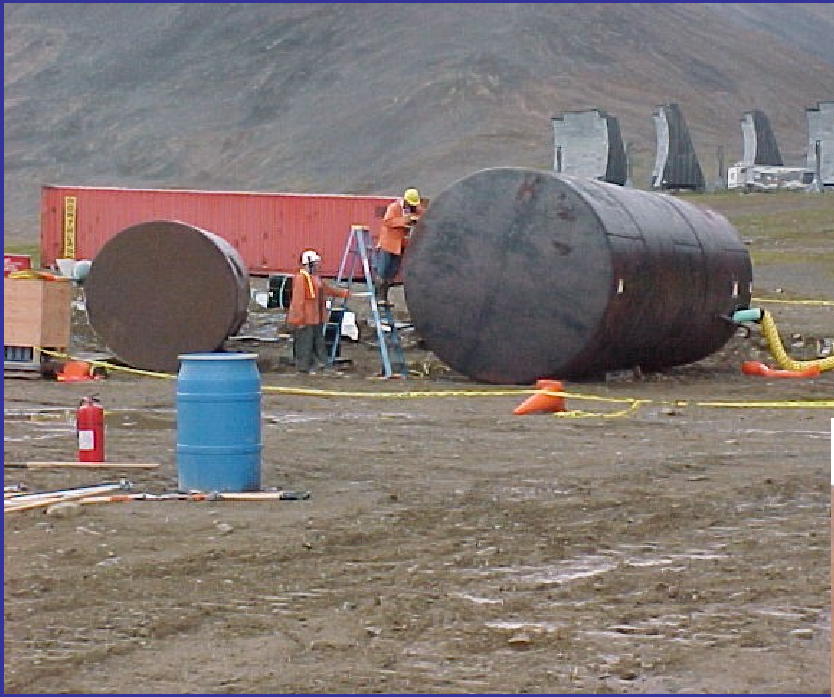
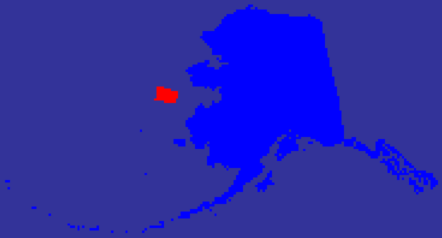


Fig. 3.26
Calcium hypochlorite in broken plastic bottles in foreground on deck of General Supply Warehouse. Viewed southerly on 9/4/93 on Northeast Cape, St. Lawrence Island, Alaska. Photographed by Larry Wilkinson, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

Tank work at NE Cape with White Alice antenna in the background





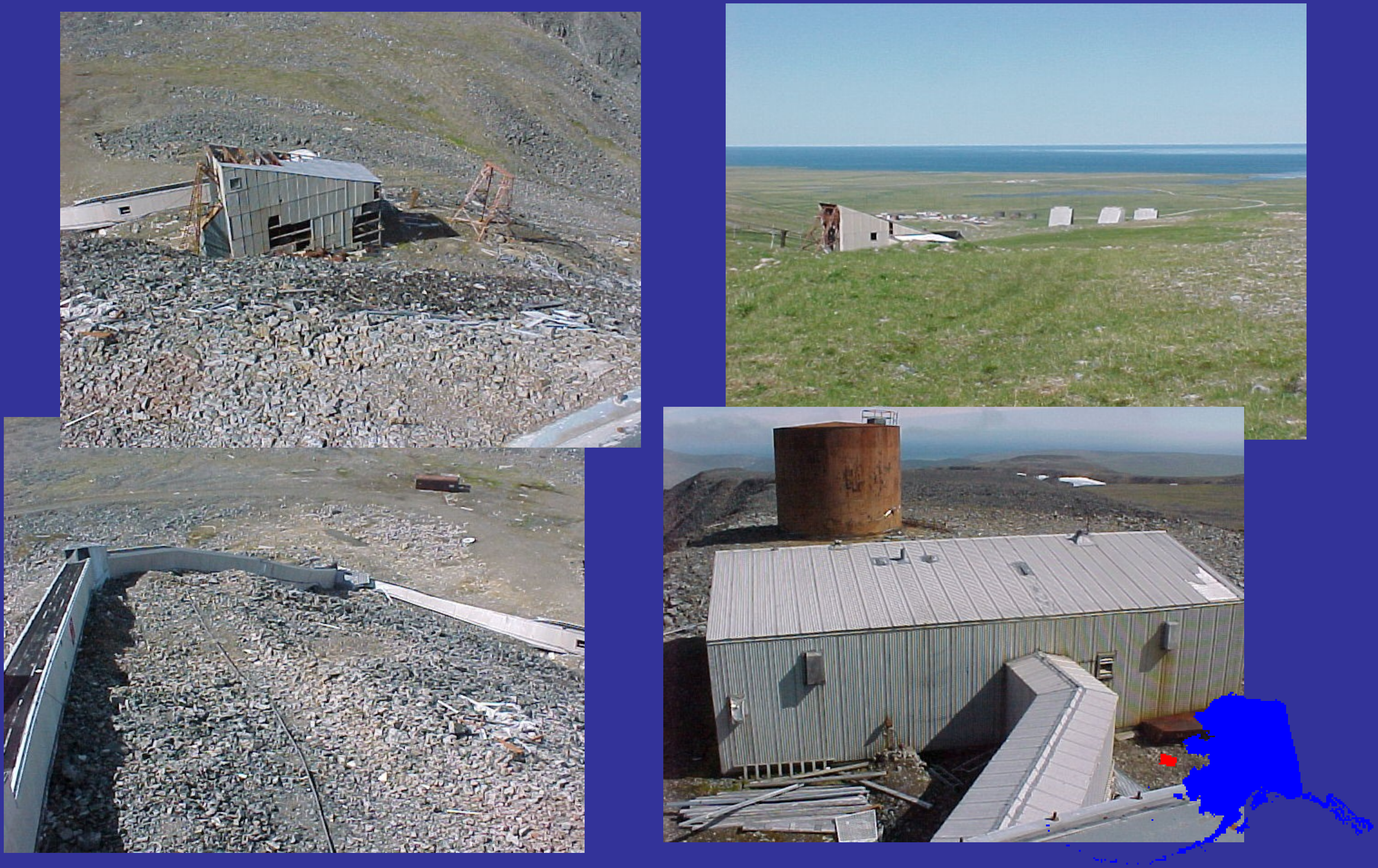
White Alice Communication System

- Over 3,000 route miles
- 31 stations
- 170,000 telephone circuit miles
- Utilized forward propagation tropospheric scatter system
- Began in 1955, completed by 1958
- Cost: $113,230,000 ($3.4 million per site)

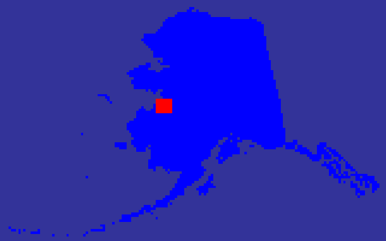
- 32 additional stations added to provide “rearward communications. Complete by 1961.

- 1967 Alaska Communications Disposal Act – turned over communication systems to private industry

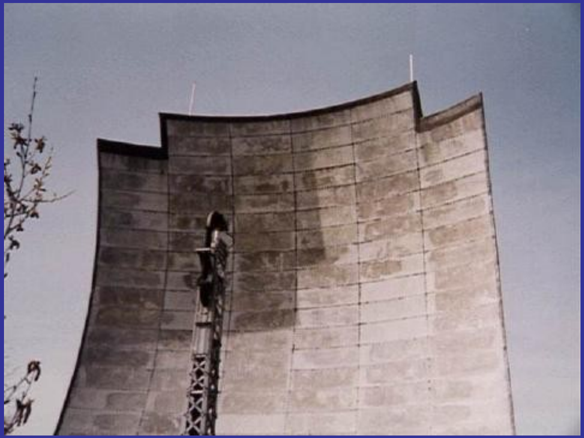
White Alice site at NE Cape St. Lawrence Island – at the top of the tram & looking towards the Aircraft Control and Warning Site

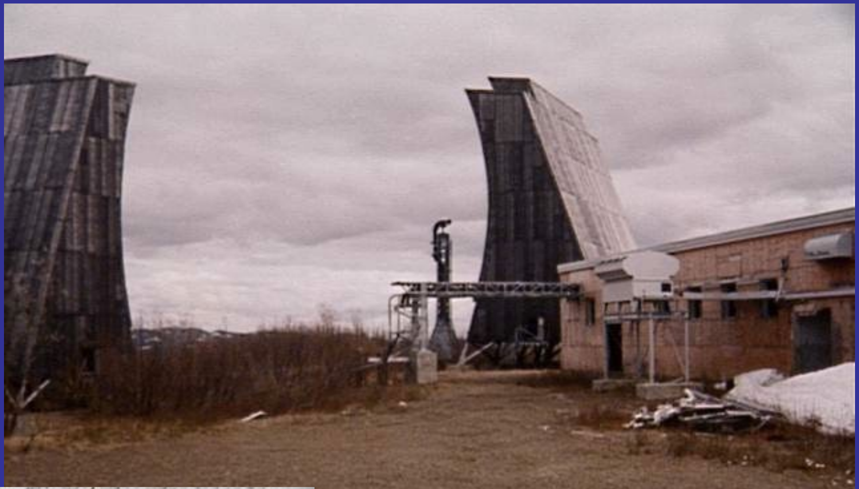


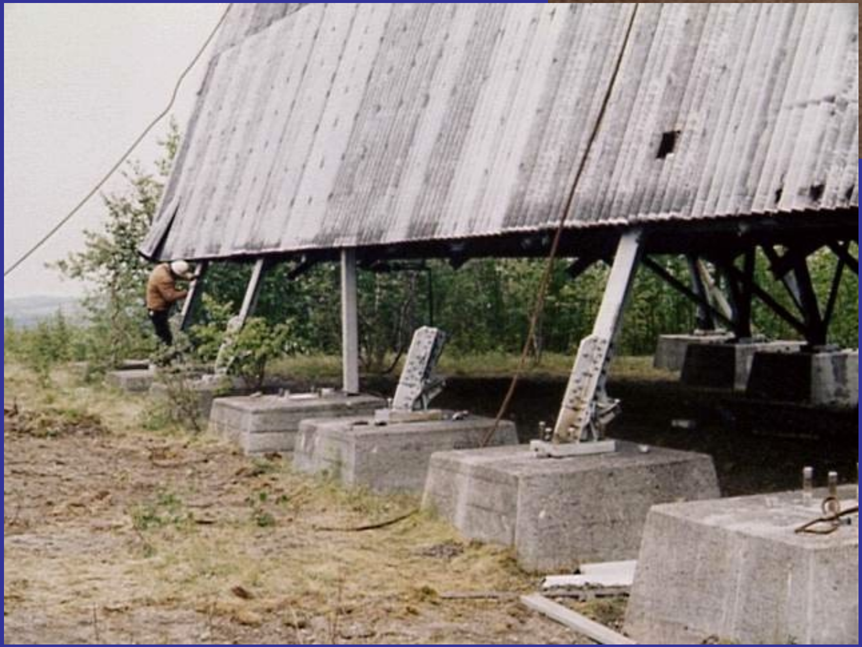
Camp at Unalakleet - North River White Alice Site



Unalakeet – North River White Alice Site antennas



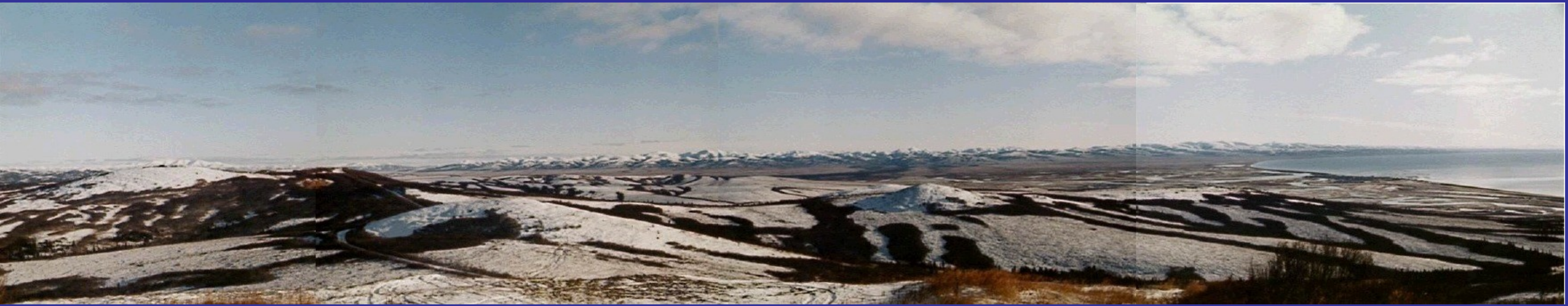


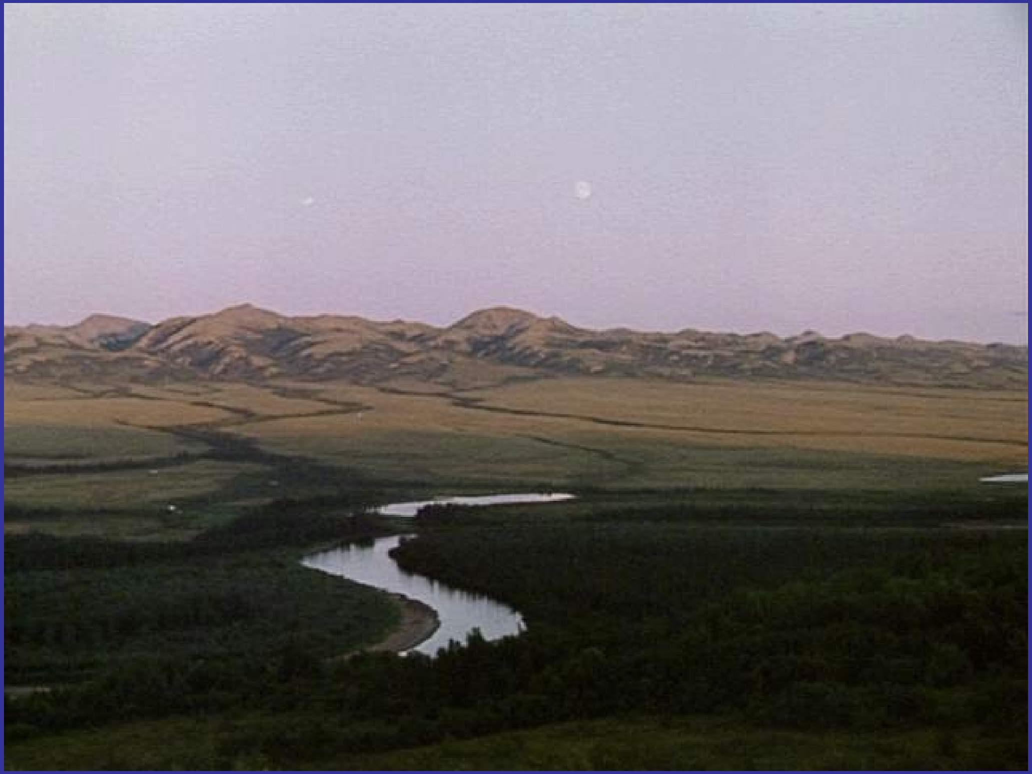


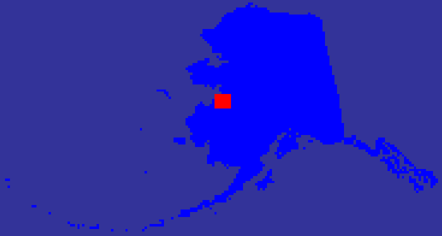
The bigger they are, the harder they fall

JUL
JUL 12 1995
AUG 7 1995

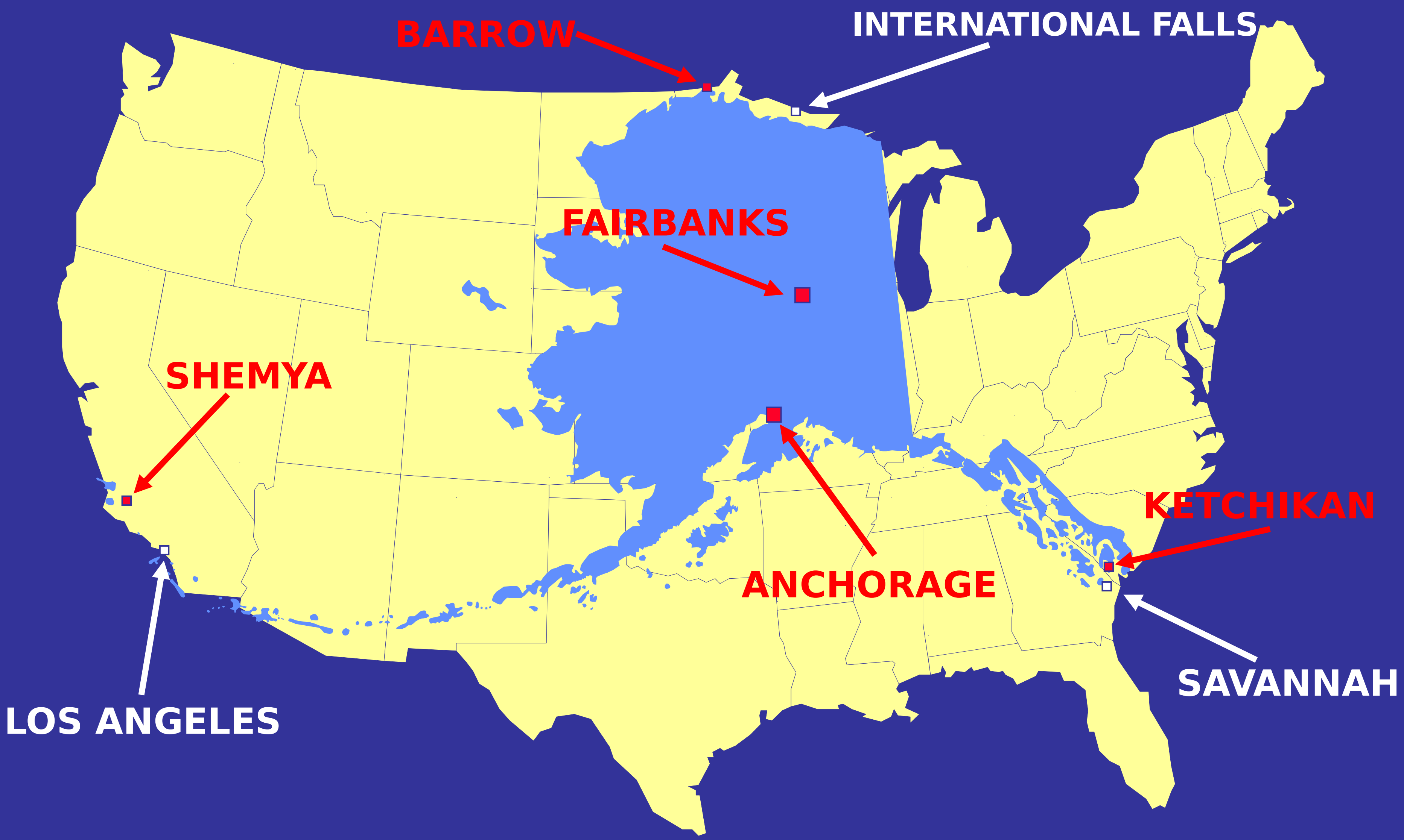
Panorama View of the Unalakleet Hills and Unalakleet River







Relative Size of Alaska


BARROW
INTERNATIONAL FALLS
FAIRBANKS
SHEMYA
KETCHIKAN
ANCHORAGE
SAVANNAH
LOS ANGELES

The Different Countries of Alaska

“There is no man living who knows the whole of Alaska or who has any right to speak about the whole of Alaska. … So, when a man from Nome speaks of Alaska he means his part of Alaska, the Seward Peninsula. When a man from Valdez or Cordova speaks of Alaska he means the Prince William Sound country. When a man from Juneau speaks of Alaska he means the southeastern coast. Alaska is not one country but many, with different climates, different resources, different problems, different populations, different interests; and what is true of one part of it is often grotesquely untrue of other parts. This is the reason why so many contradictory things have been written about the country. Not only do these various parts of Alaska differ radically from one another, but they are separated from one another by almost insuperable natural obstacles, so that they are in reality different countries.”

-Hudson Stuck, *Ten Thousand Miles With a Dog Sled: A Narrative of Winter Travel in Interior Alaska,* 1929

Remoteness Issues

No roadways to most sites

- Transportation modes:
  - Winter: icepack, ice roads, rolligon, snowmachine
  - Summer: air, barge
  - Aircraft: plane, helicopter

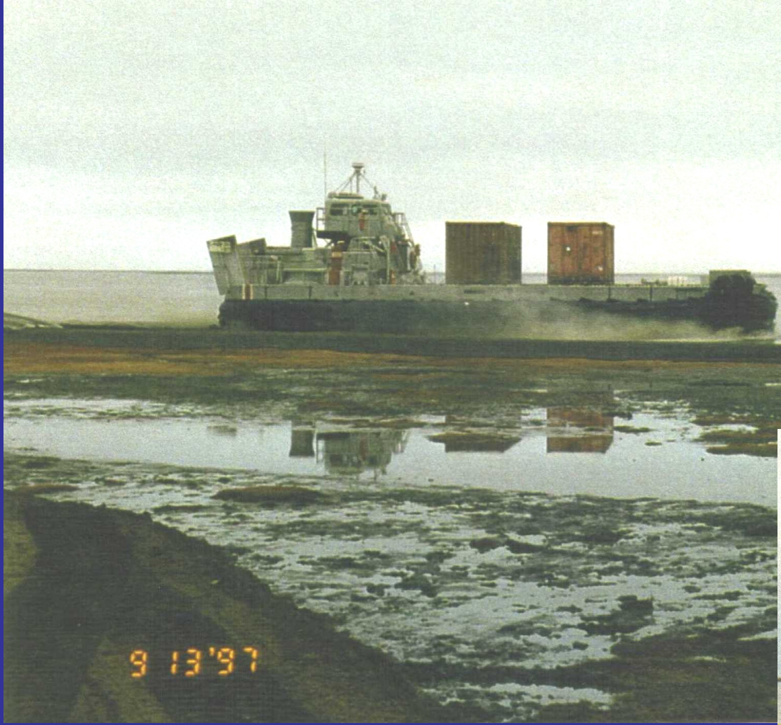
no single engine fixed wing per DoD restrictions for DoD personnel

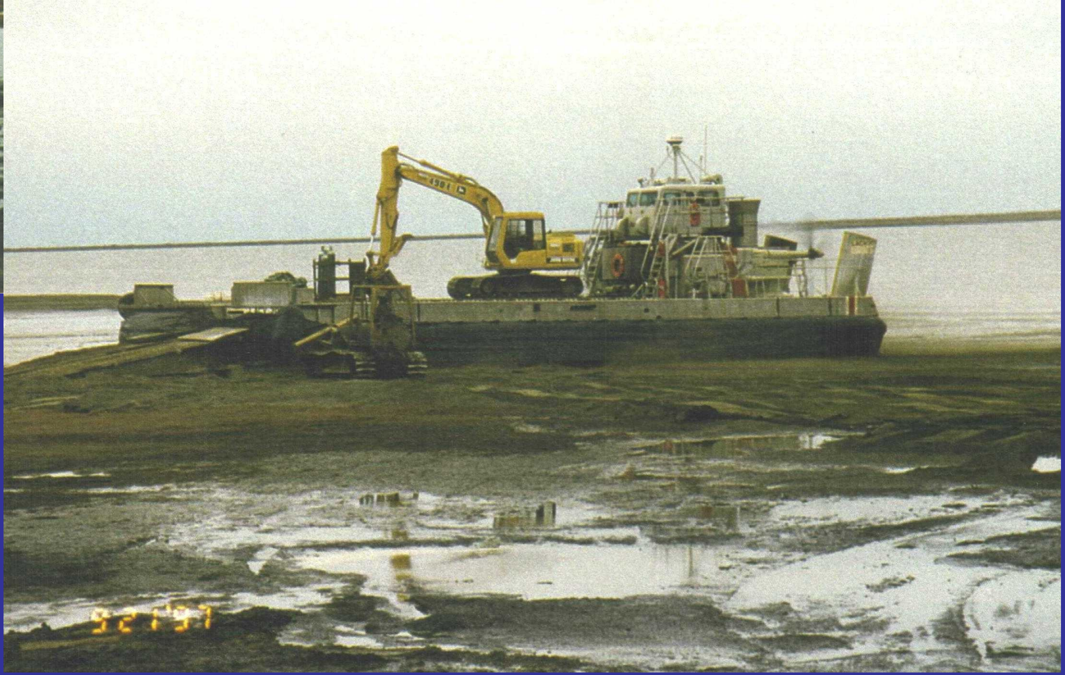
- Communication problems
  - no established phone lines
  - no cell phone zones in remote areas
  - satellite communication only access in remote area

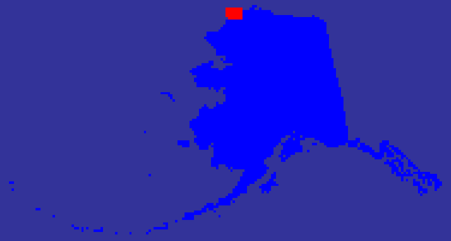
- Emergency Response problem

Barge at Cape Simpson & Barter Island DEW Line Stations

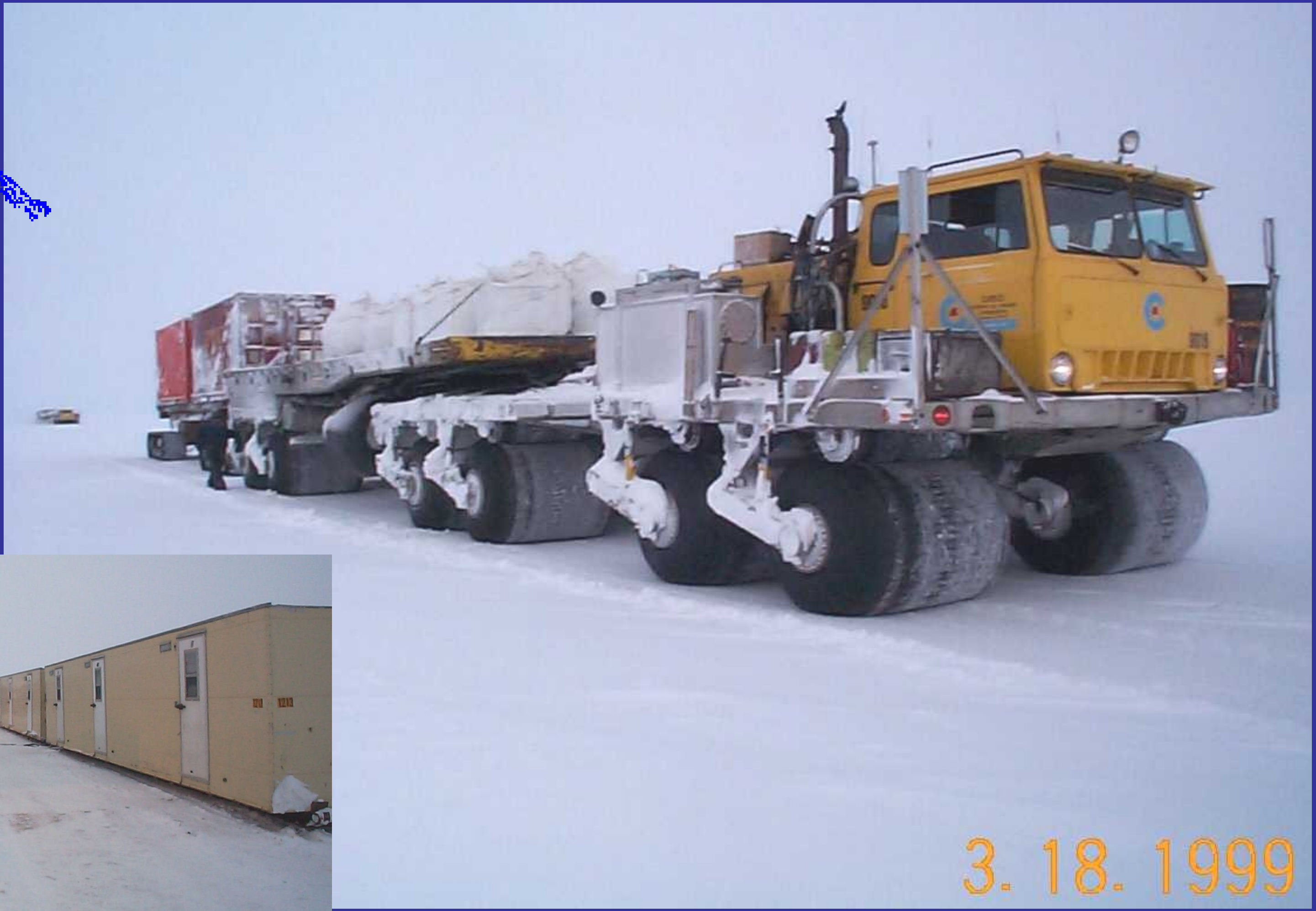
Hovercraft used to ferry materials to/from Barge at Icy Cape DEW Line Station







Rolligon used to mobilize camp to Kogru DEW Line Station


3. 18. 1999

3. 17. 1999

Site visits using a Blackhawk helicopter with mid-air refueling

8. 9. 2000

8. 9. 2000

Helicopter transport at Tapkaurak Spit

7. 12. 1999
7. 12. 1999

Transport for NE Cape St. Lawrence Island

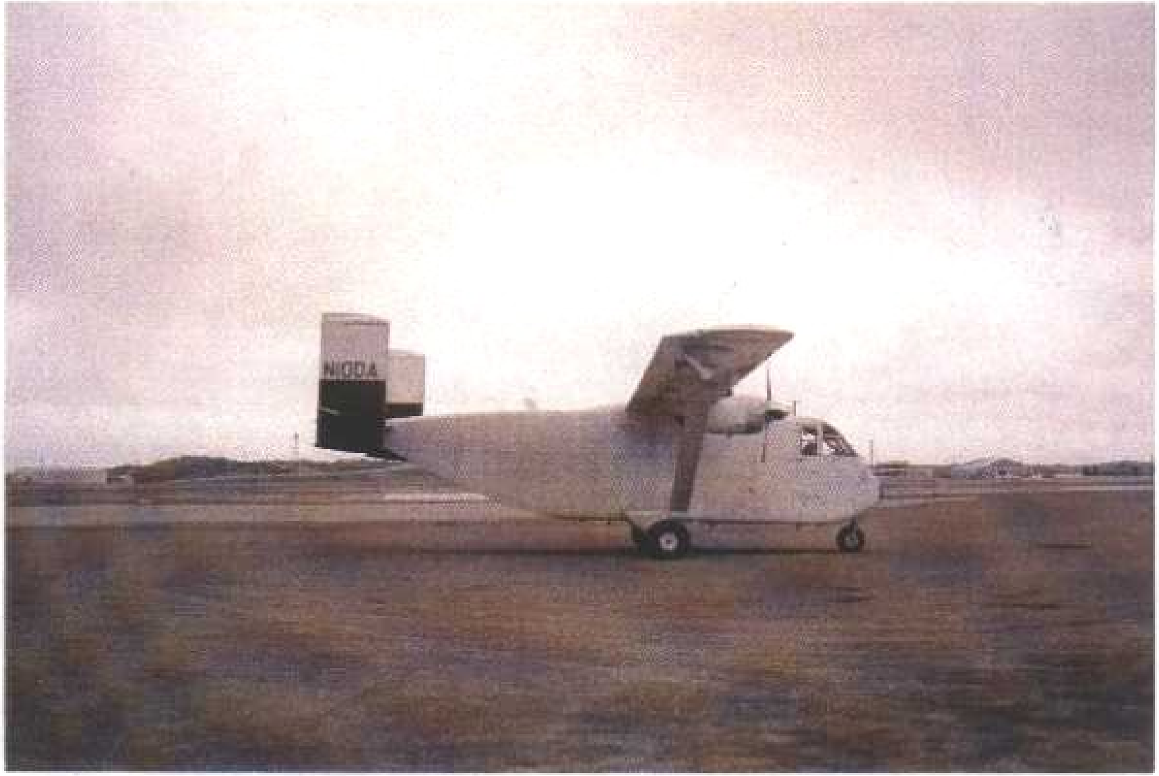
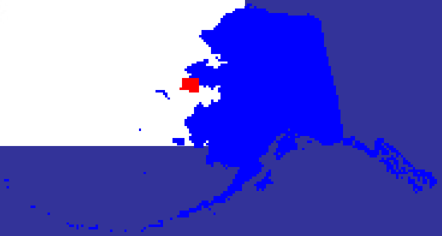


Fig. 3.34

Skyvan for hauling supplies and empty drums into site. Parked on tarmac at Nome Airport viewed southerly on 7/6/94. Photographed by Larry Wilkinson, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.



HERC at NE Cape St. Lawrence Island

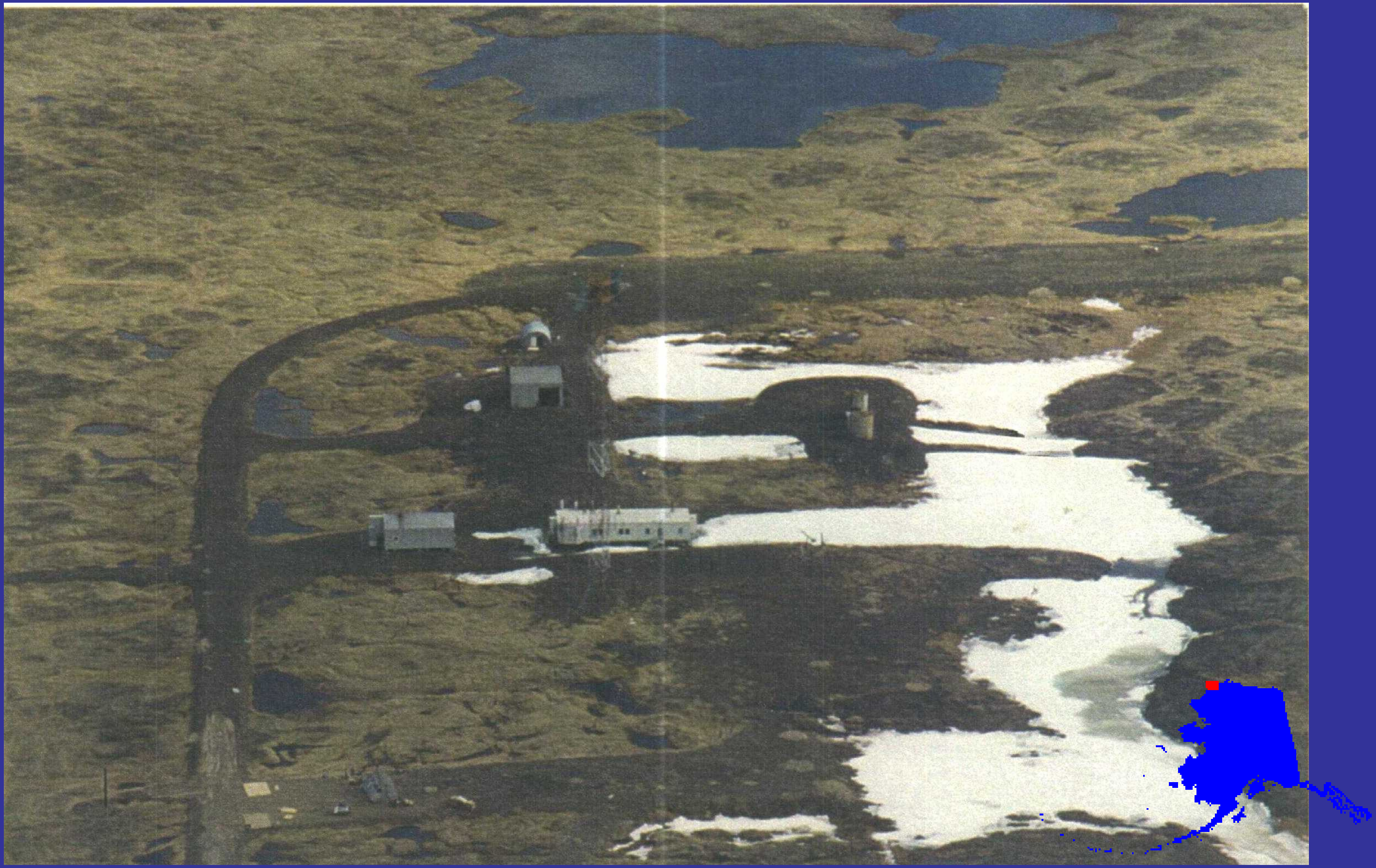
Ron Pflum – POA PM on an Iridium Phone

AK ALASKA DISTRICT

Season Issues

- Short Construction season:
  - spring breakup as late as mid July
  - first snows as early as August
- Winter work:
  - extreme temperatures (-70° F and colder)
  - extremely short days (< 4hrs in Fairbanks; no daylight in Barrow)
- Summer work:
  - insects/wildlife
  - hypothermia
  - temperatures of 90° F
  - long daylight hours (up to 24 hrs)
  - sea ice possible all summer (polar bear encounters)

Icy Cape DEW Line Station - June 28, 1997



Where are the Impirial Walkers?

QAR quarters and windstorm damage at NE Cape St. Lawrence Island

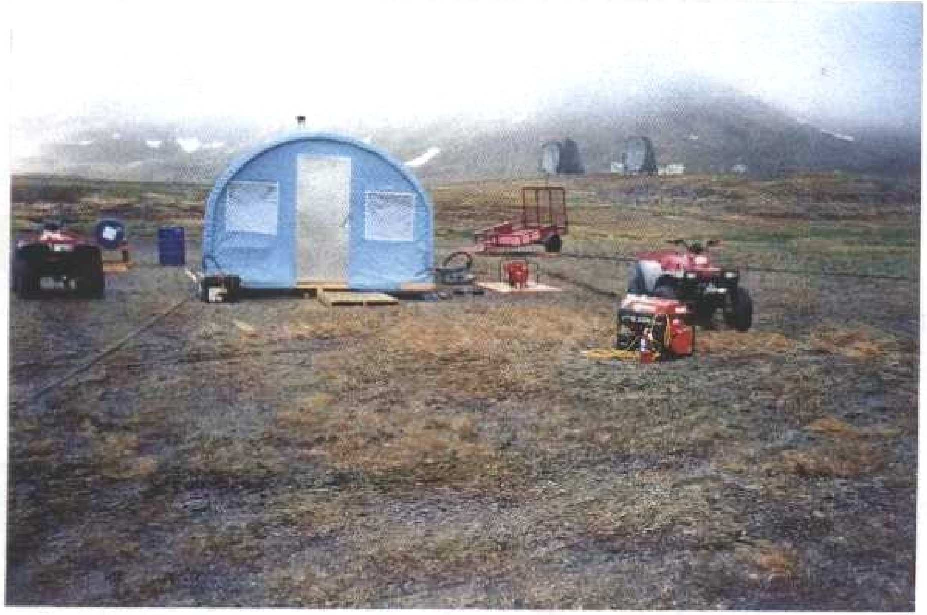


Fig. 3.28

Four-man weatherport, local transportation, heating oil and other ammenities. White Alice antennas in background, viewed northeasterly on 7/6/94 at Northeast Cape, St. Lawrence Island, Alaska. Photographed by Larry Wilkinson, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

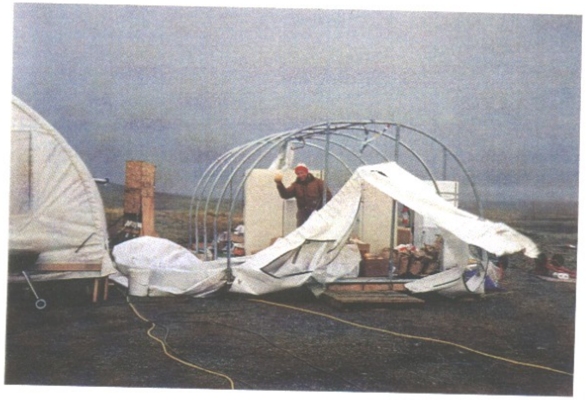


Fig. 3.29

Wind damage to food storage cache following 70 - 90 mph windstorm at construction camp. Viewed westerly on 7/7/94 at Northeast Cape, St. Lawrence Island, Alaska. Photographed by Michael Naquin, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

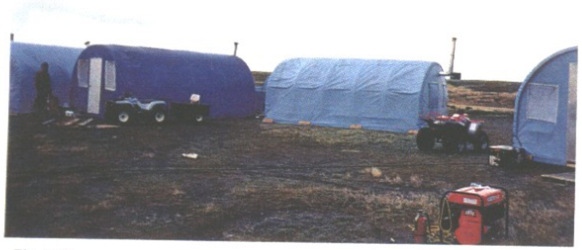
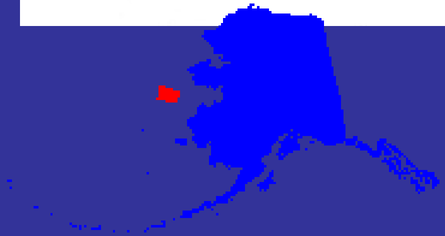


Fig. 3.30

Front end of weather port in pivoted position after 70 - 90 mph windstorm at construction camp. Viewed northernly on 7/7/94 at Northeast Cape, St. Lawrence Island, Alaska. Photographed by Michael Naquin, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

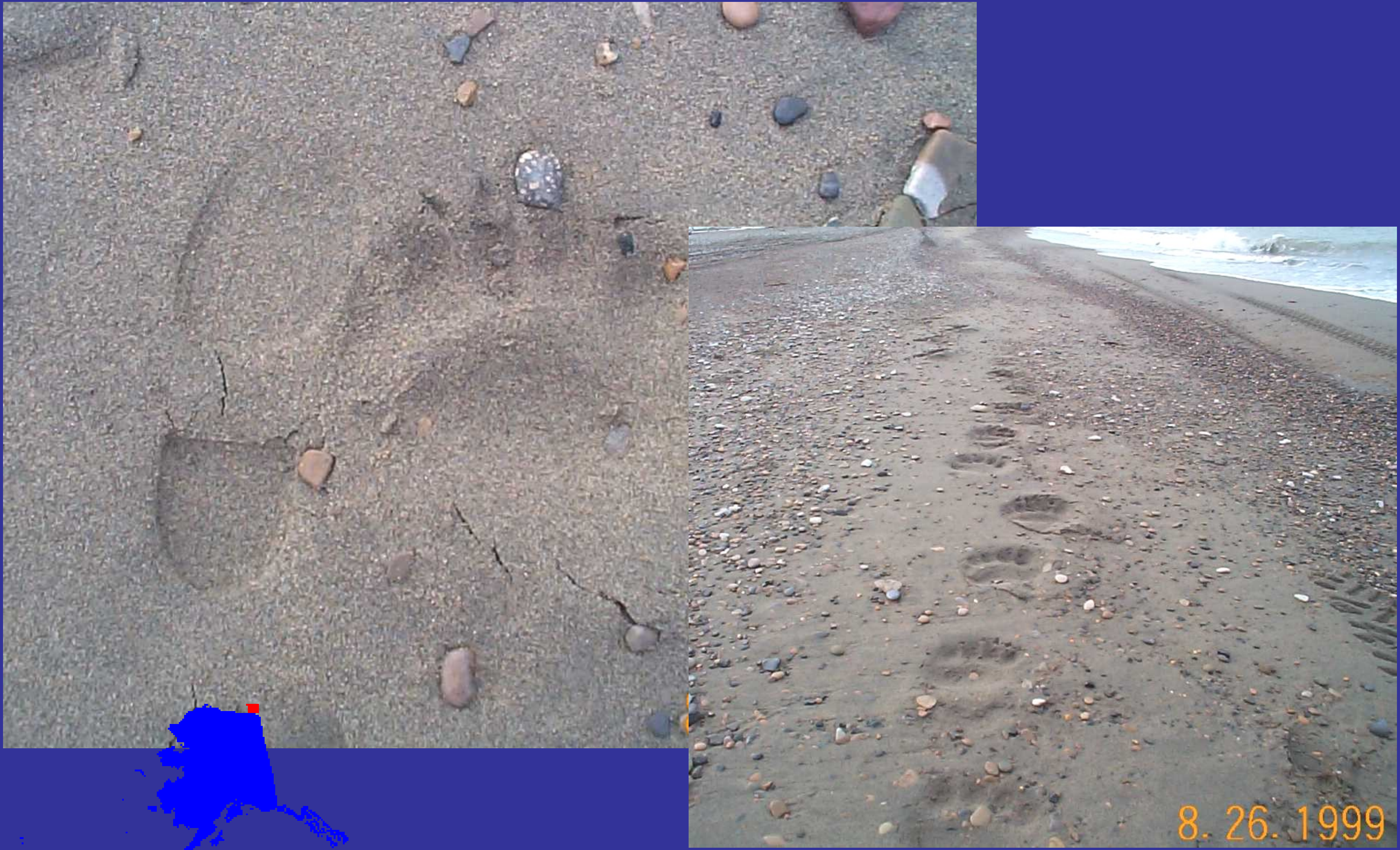


Wildlife Issues

- Polar/Grizzly/Black Bears and use of bear guards
- Moose
- Fox
- Bird nests
- Mosquitoes/white socks/no-see-ums/gnats

Polar bear cub at Cape Simpson DEW Line Station

Polar bear tracks at Tapkaurak Spit

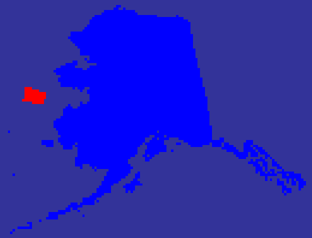


Members of the Barrow Polar Bear Club!

8. 8. 2000

Caribou herd – Collinson Point DEW Line Station in ANWR

Arctic fox at NE Cape St. Lawrence Island



Musk Ox

Bzzzzzz……….SLAP!

North Slope Mosquitoes Looking for Blood
Alaska's State Bird

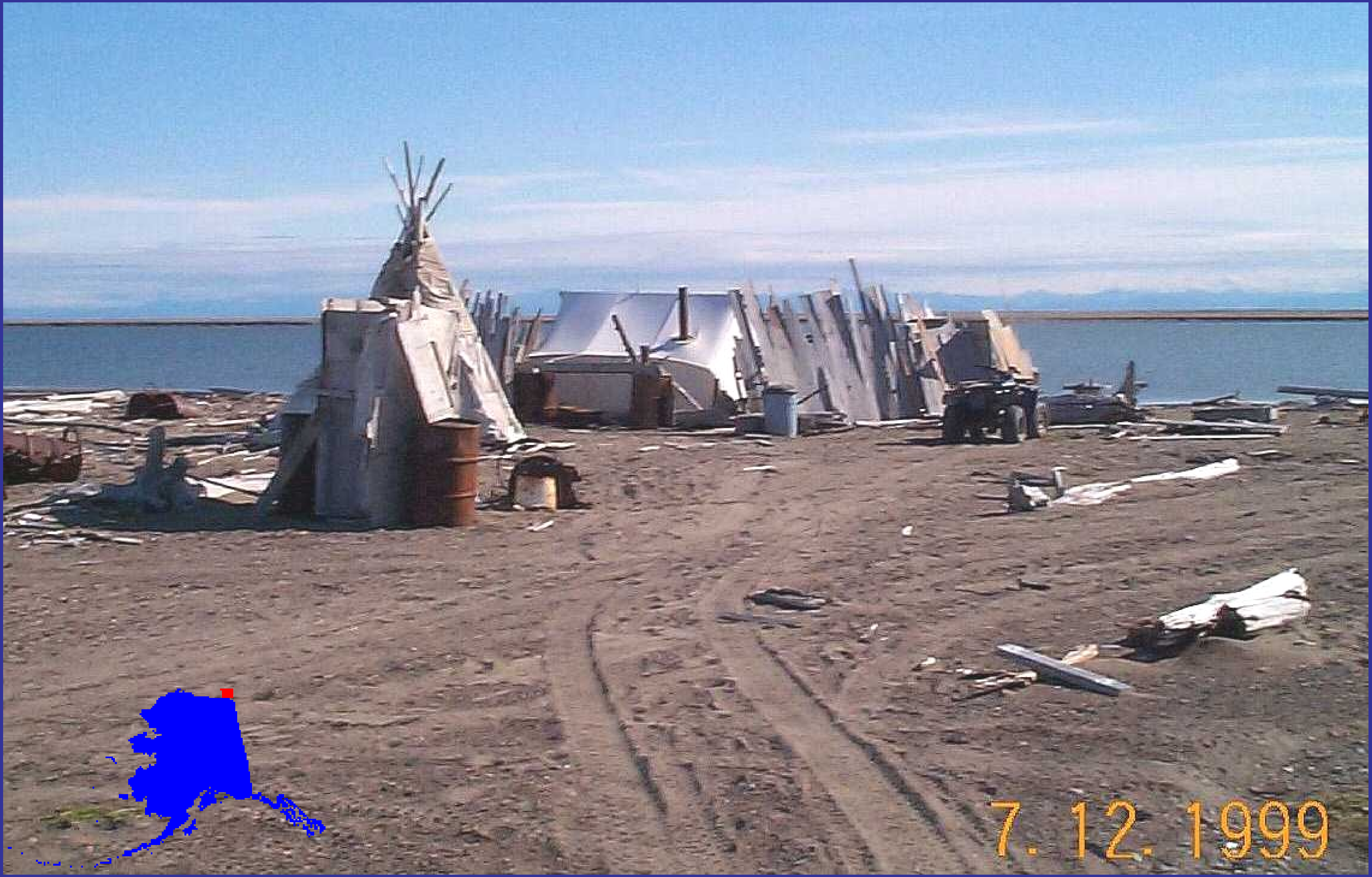
OK, so she’s not wildlife, but she is wild!

Moose on my front lawn

Native Issues

- Local hire
- Incomplete removals
- Removal of items used as markers or emergency shelters
- Residual contamination
- Long term health risks
- Subsistence
- Archeological sites/artifacts
- Land access
- Communication/slow response

Fish camp at Tapkaurak Spit



Communication of hazards

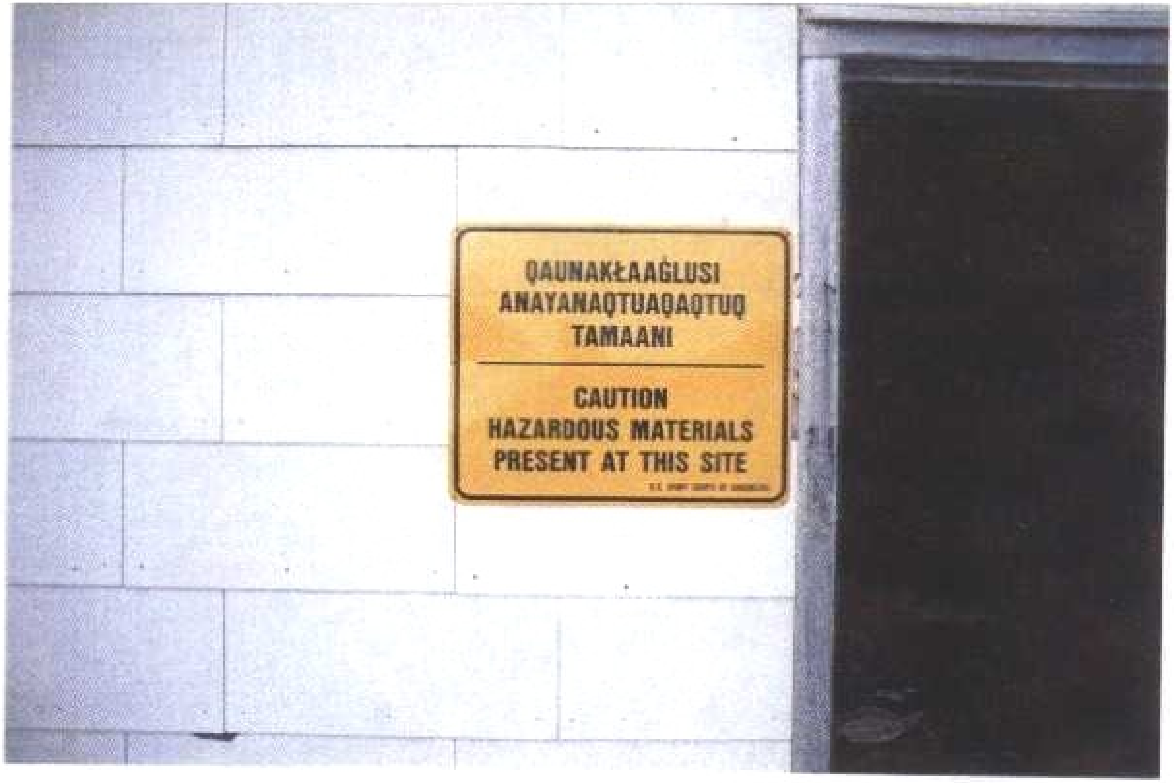
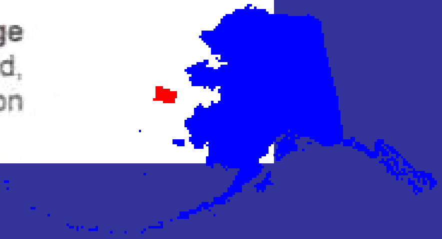

QAUNAKŁAAĠLUSI
ANAYANAQTUAQAQTUQ
TAMAANI
CAUTION
HAZARDOUS MATERIALS
PRESENT AT THIS SITE

Fig. 3.23
Local warning sign in Siberian Yupik on outer wall of Paint and Dope Storage Building, viewed westerly on 9/4/93 at Northeast Cape on St. Lawrence Island, Alaska. Photographed by Larry Wilkinson, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

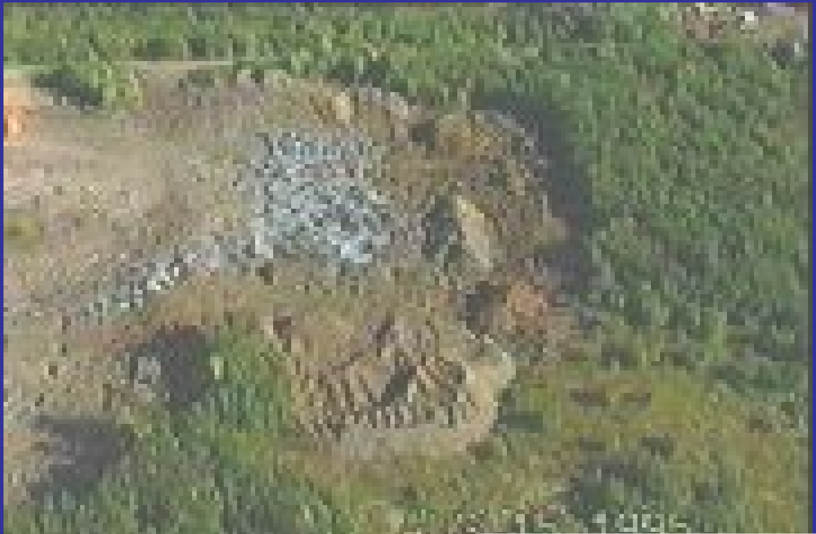


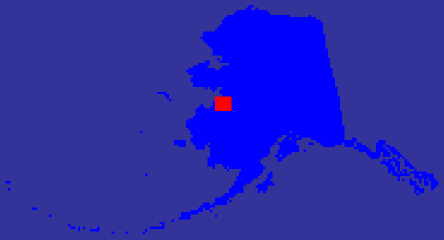
Disposal Issues

- No hazardous waste disposal facilities
- Limited landfill access
- Long transportation times for RCRA/TSCA wastes

Landfill operations at Unalakleet – North River Radio Relay Site

ALASKA DISTRICT





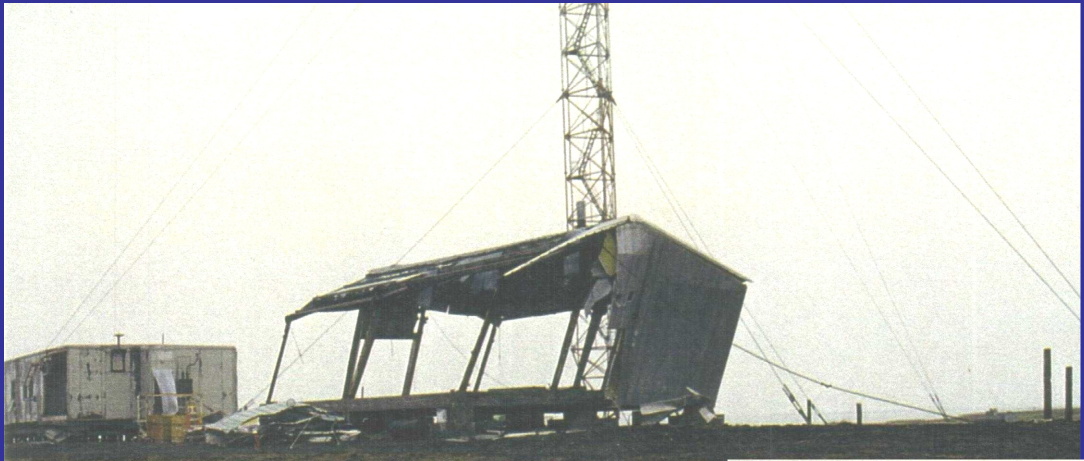
State Issues

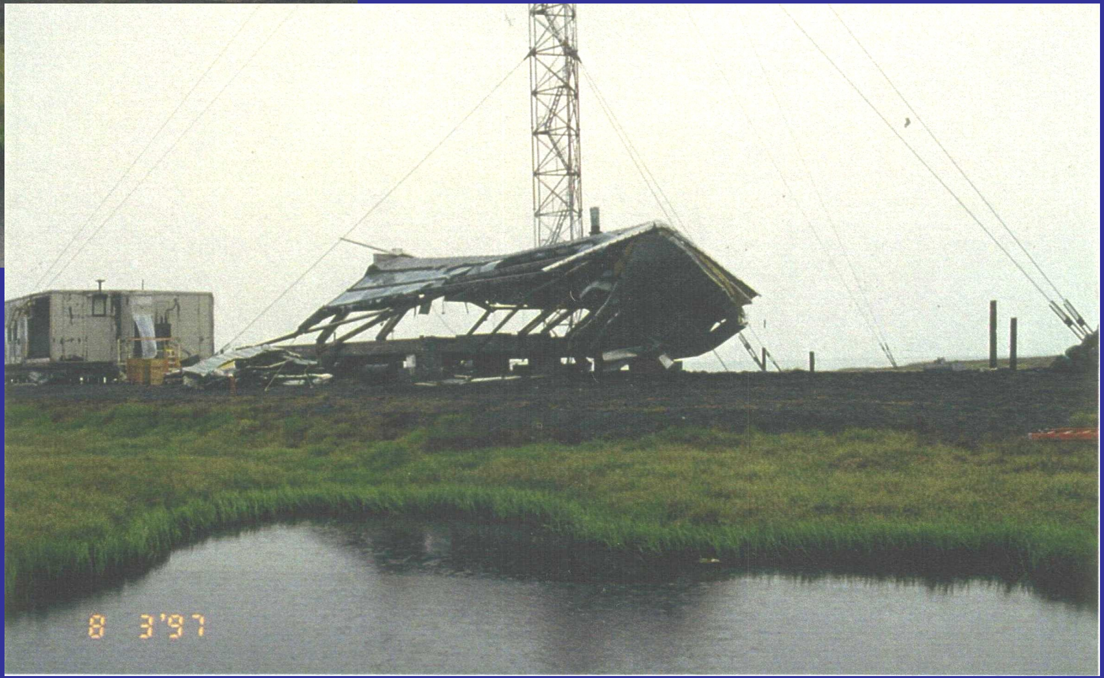
- Clean up criteria can be more strict than Federal Criteria (PCBs, POLs)
- Landfill Permits
- Coordination of reviews

Typical Removal Actions

- Building Demolition
- Antenna Removal
- Debris Removal
- Asbestos/lead/PCB abatements
- POL pipeline removals
- Tank removals
- Contaminated soil removal
- Contaminated water treatment/removal

Pulling down the shop building using a chain at Icy Cape DEW Line Station

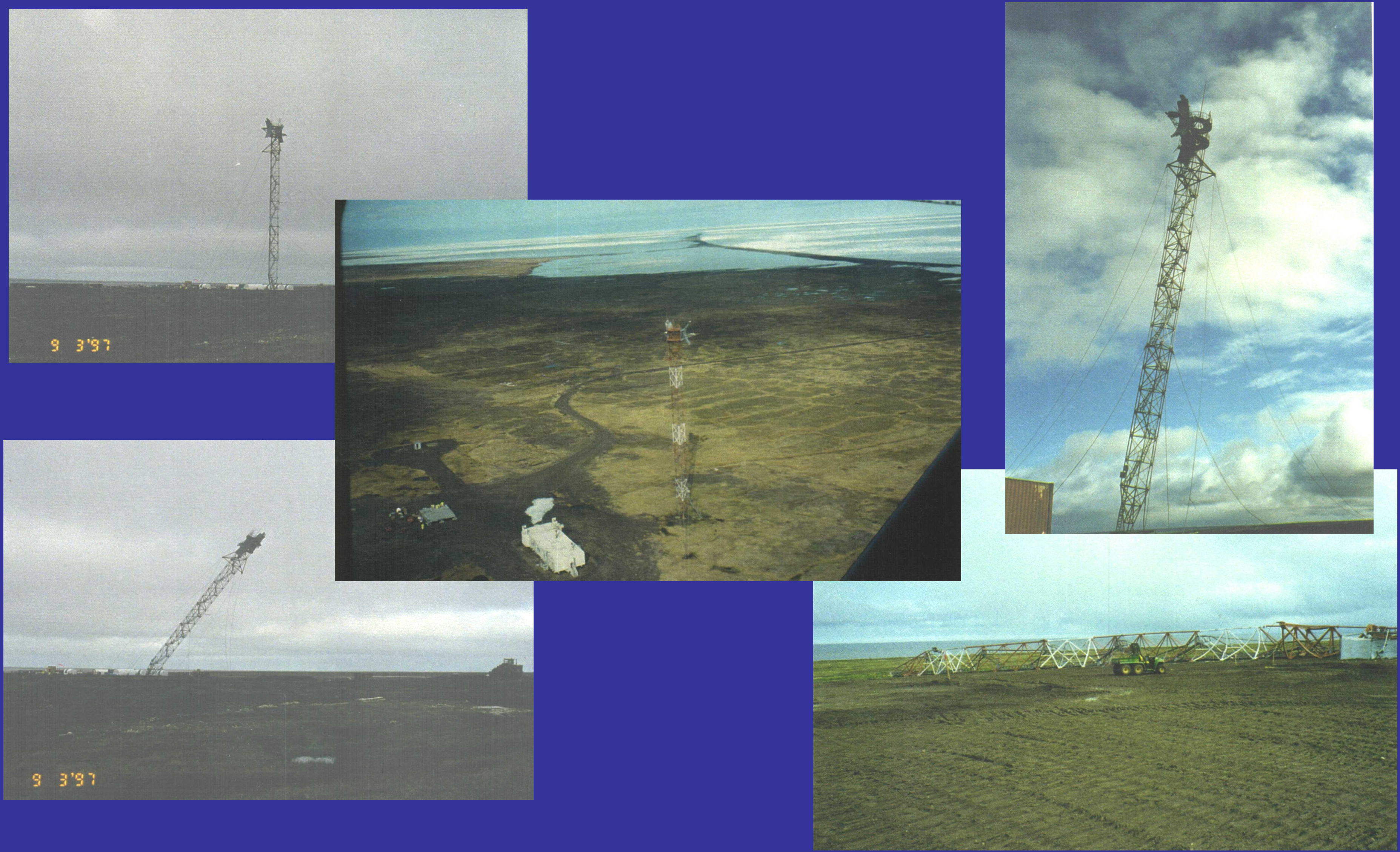




AK ALASKA DISTRICT

Downing a tower at Icy Cape & Peard Bay

DEW Line Stations



PCB removal action at NE Cape St. Lawrence Island

ALASKA DISTRICT

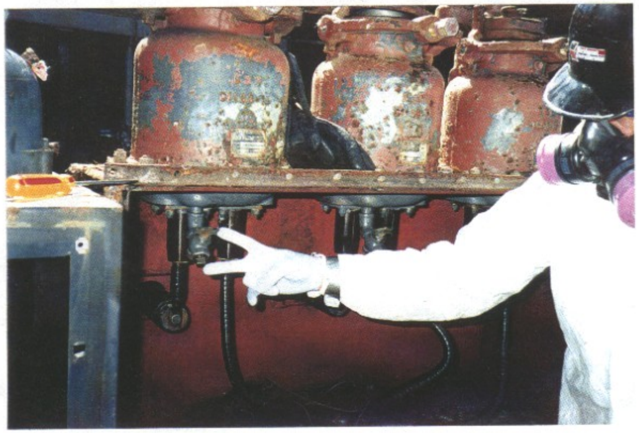


Fig. 3.7
Valve and plug system inside switch inside Building 110 viewed northeasterly on 7/18/94 at Northeast Cape, St. Lawrence Island, Alaska by Michael Naquin, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

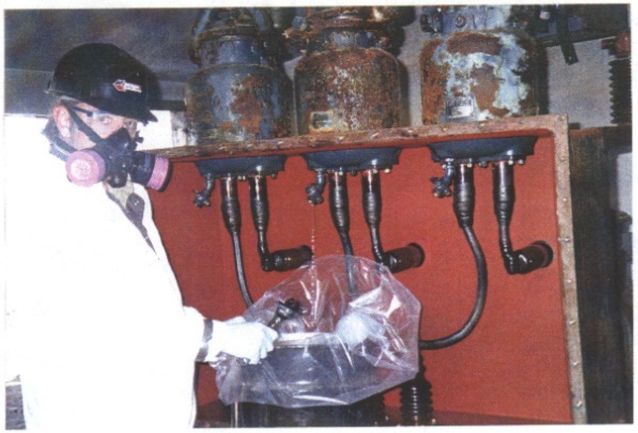


Fig. 3.8
Switch being drained inside Building 110 viewed northeasterly at Northeast Cape, St. Lawrence Island, Alaska on 7/18/94 by Michael Naquin, Northwest EnviroService, Inc. on Contract DACA85-93-C-0048.

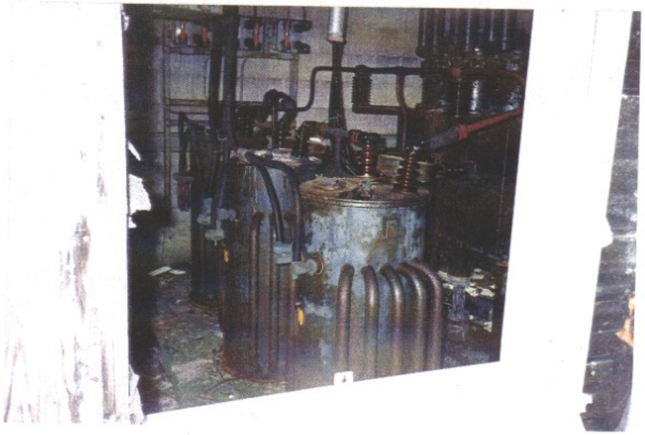


Fig. 3.13
Southern set of transformers inside Building 110 viewed southerly on 9/4/93 by Larry Wilkinson, Northwest EnviroService, Inc. on St. Lawrence Island, Alaska on Contract DACA85-93-C-0048.

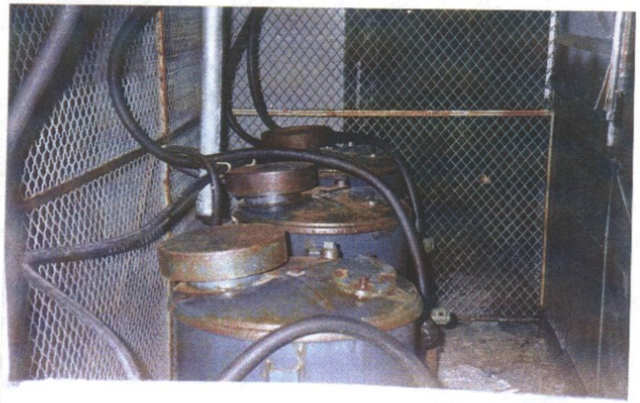
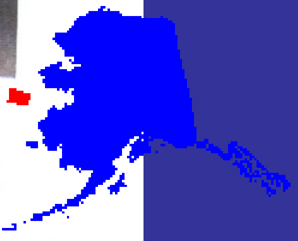
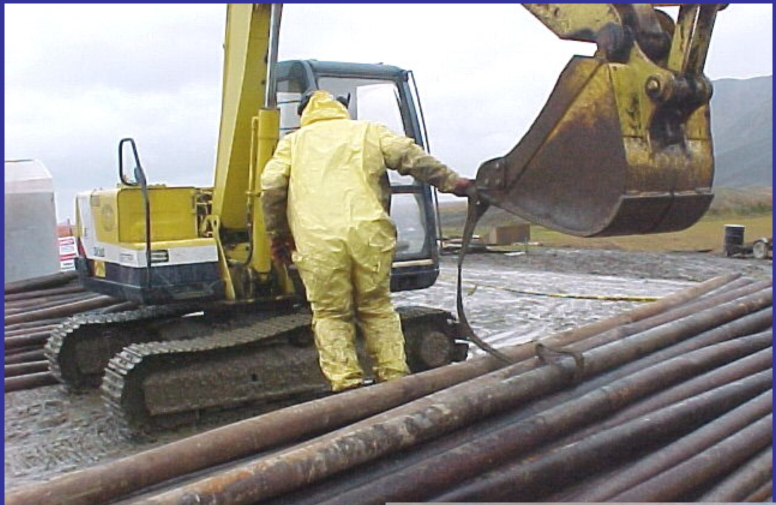


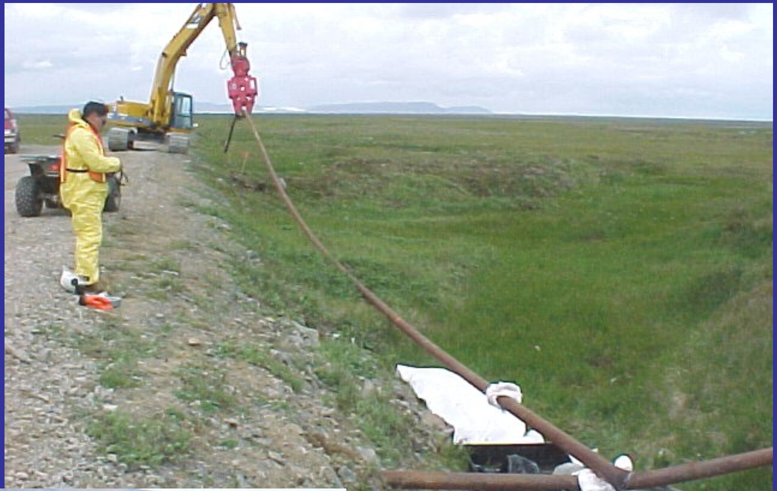
Fig. 3.14
Transformers inside Building 98 viewed southernly on 9/4/93 by Larry Wilkinson, Northwest EnviroService, Inc. on St. Lawrence Island, Alaska on Contract DACA85-93-C-0048.

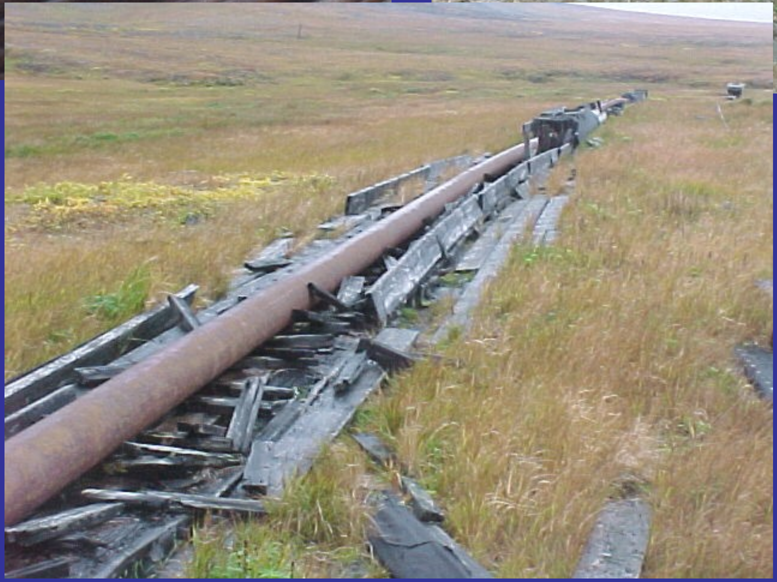


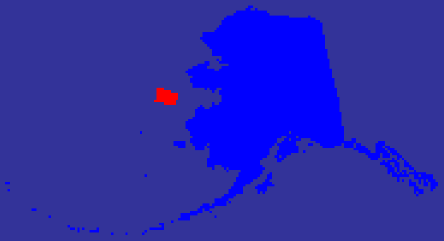
Pipeline removal at NE Cape St. Lawrence Island

ALASKA DISTRICT



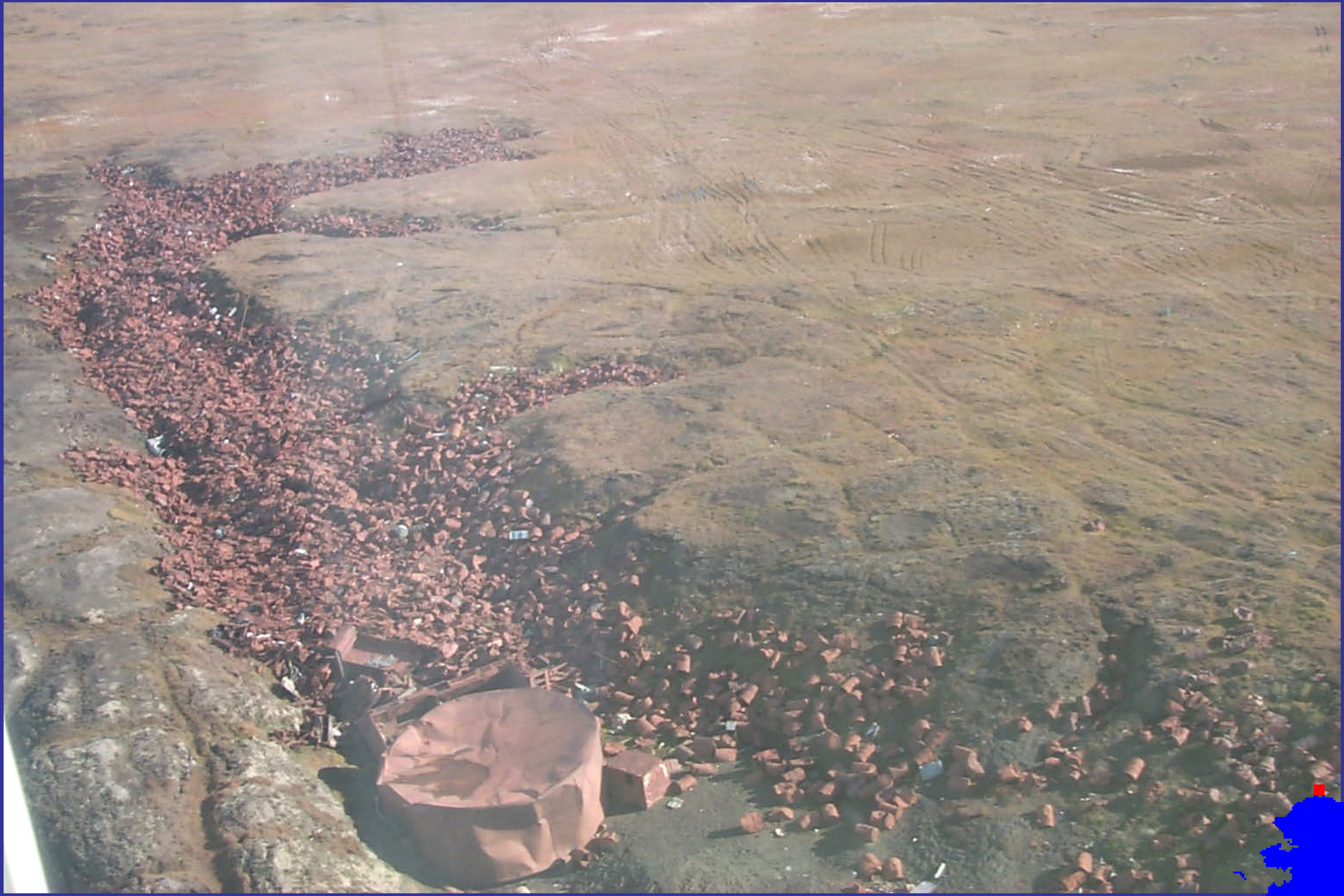






Ready to enter the tank at Cape Simpson DEW Line Station

Barrow drum dump



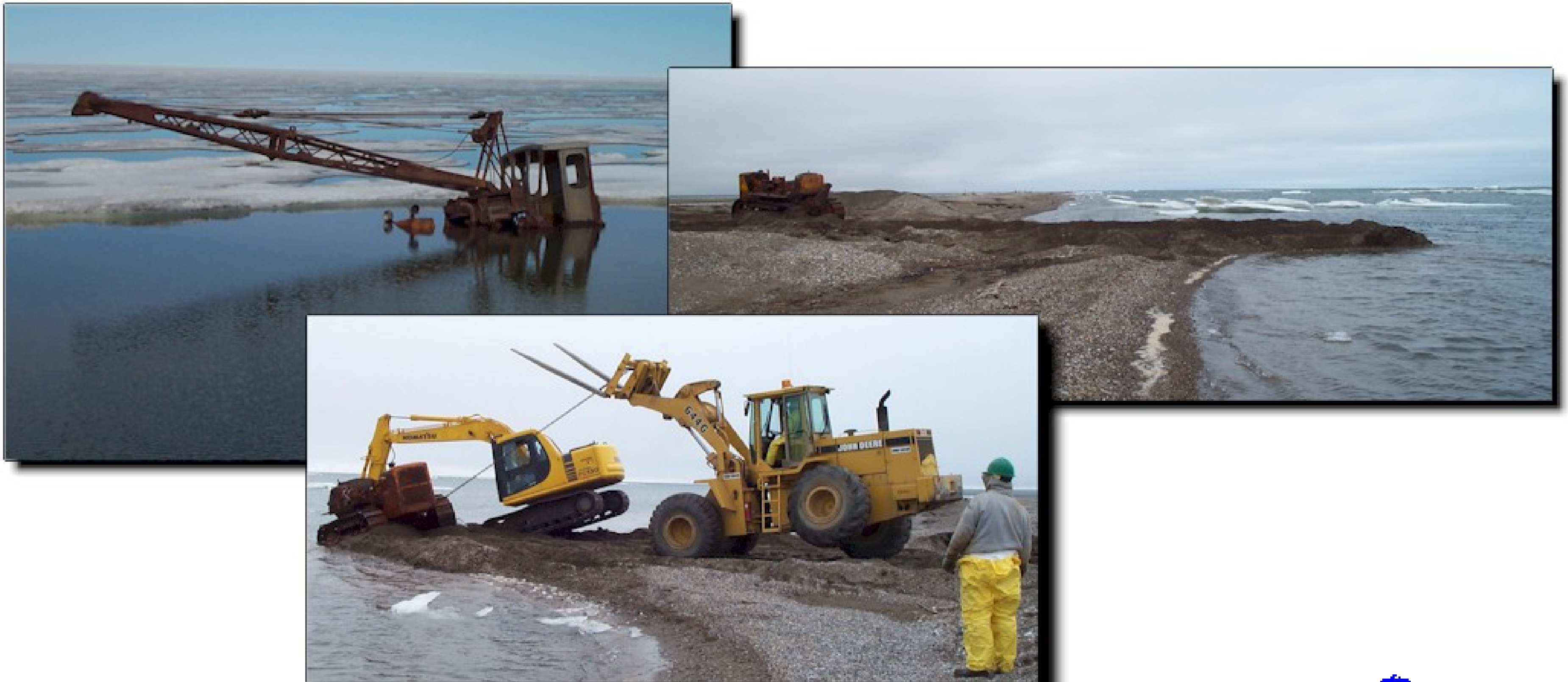
Poles, wires, and repercussions

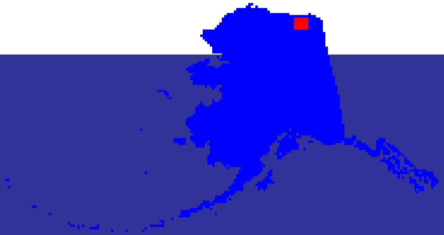
Water treatment, CONHTW storage, & HAZCATTING at NE Cape St. Lawrence Island

Trash Only
NCIOIL
9-20-00
BULB-001
9-25-00

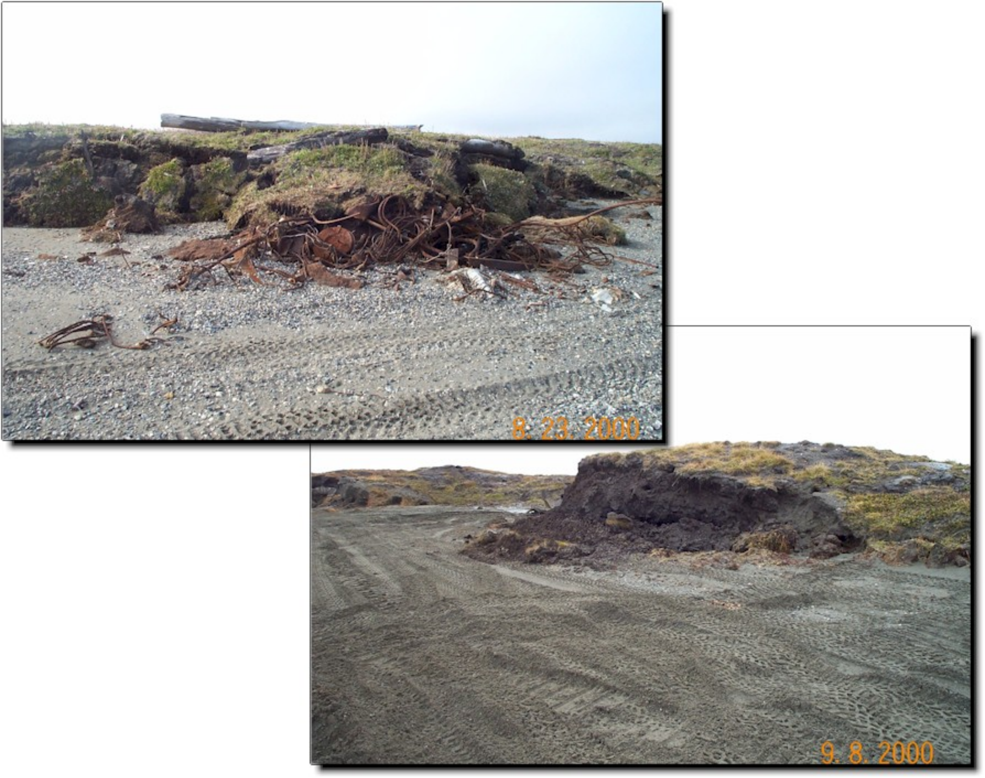
Signing manifests at Unalakleet

Removal of dozer crane from the Arctic Ocean - Collinson Point DEW Line Station

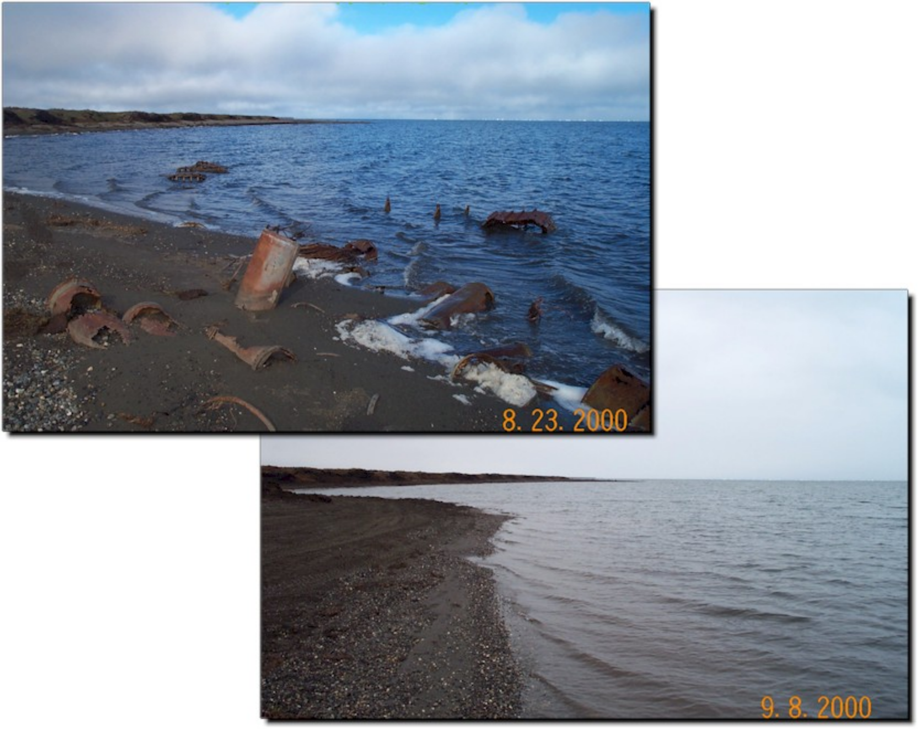




Nuvagapak beach cleanup

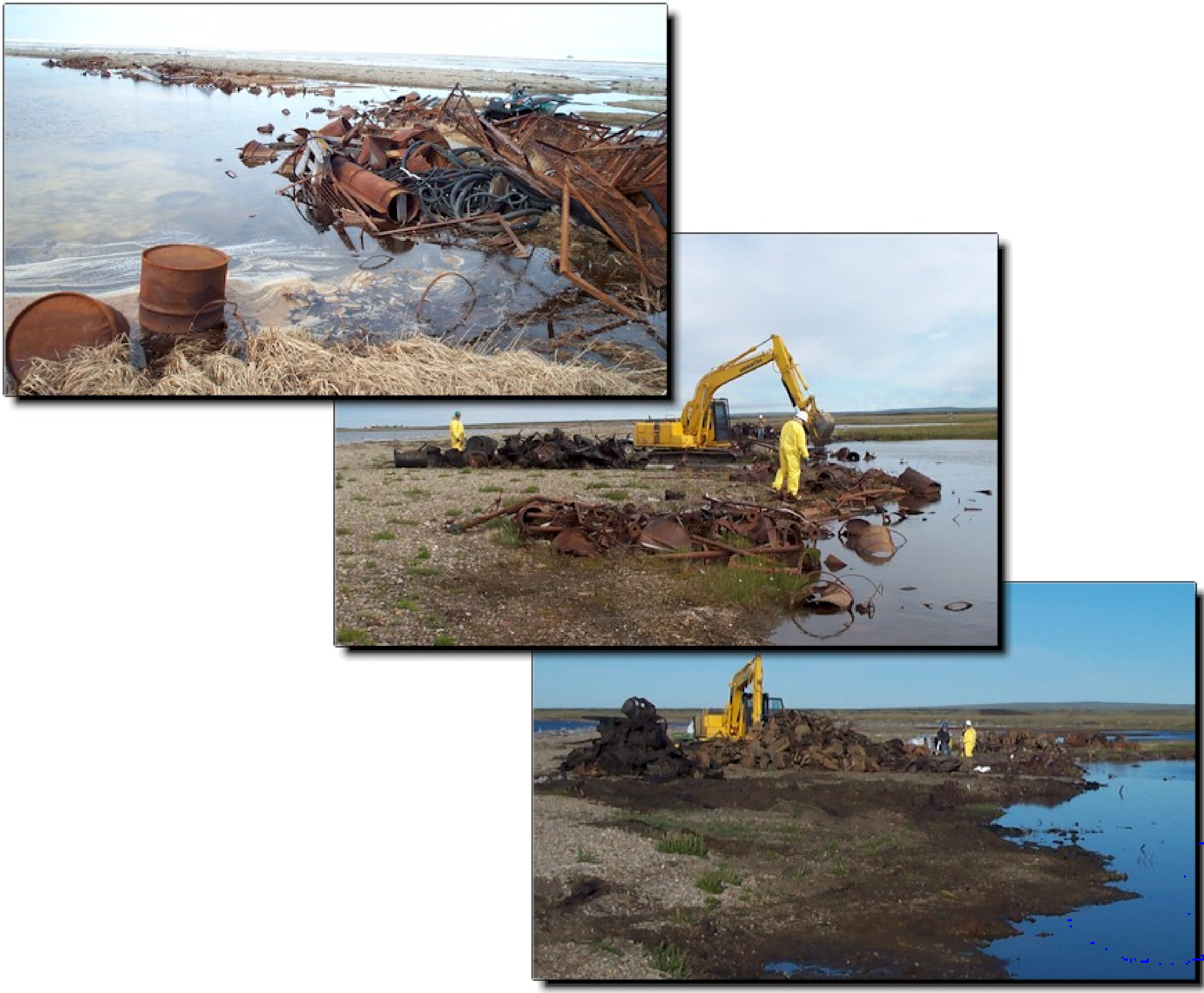

8. 23. 2000

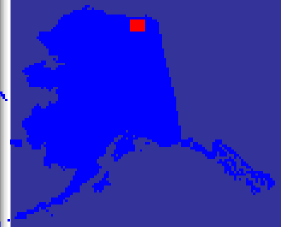
9. 8. 2000


8. 23. 2000

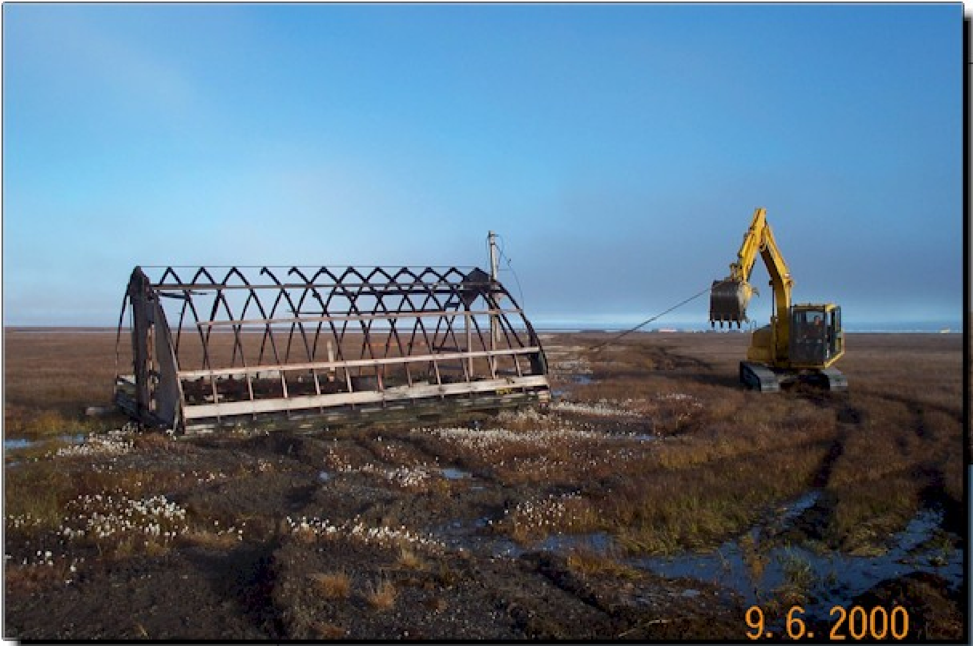
9. 8. 2000

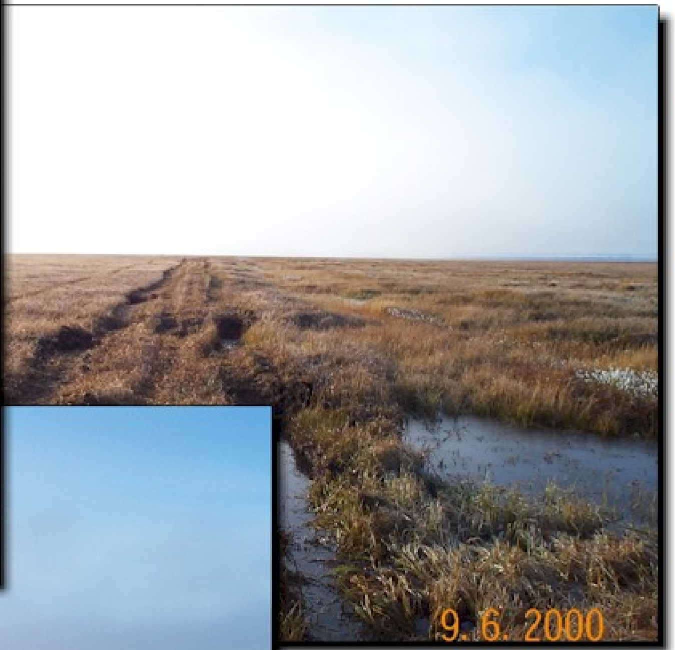
Pond cleanup – Collinson Point DEW Line Station

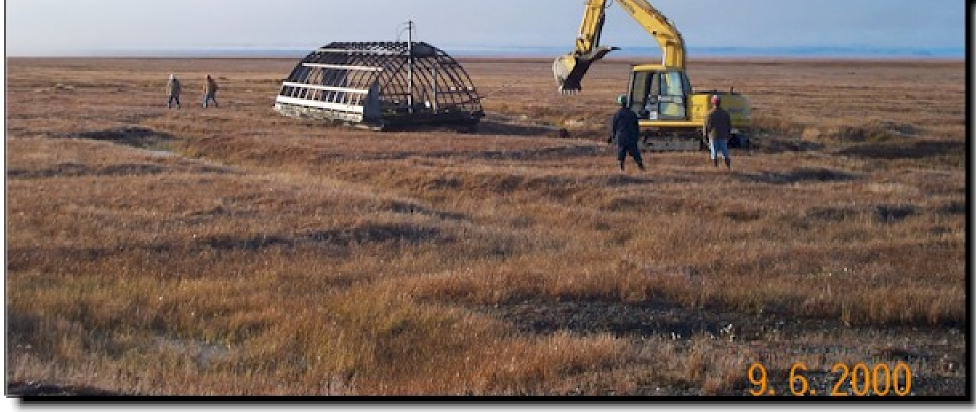


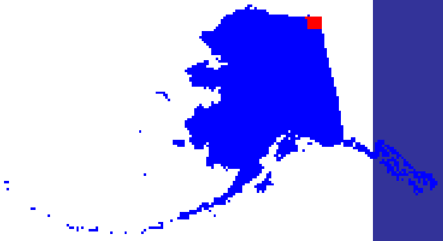


Removal of a Quonset hut from the tundra - Nuvagapak Point DEW Line Station



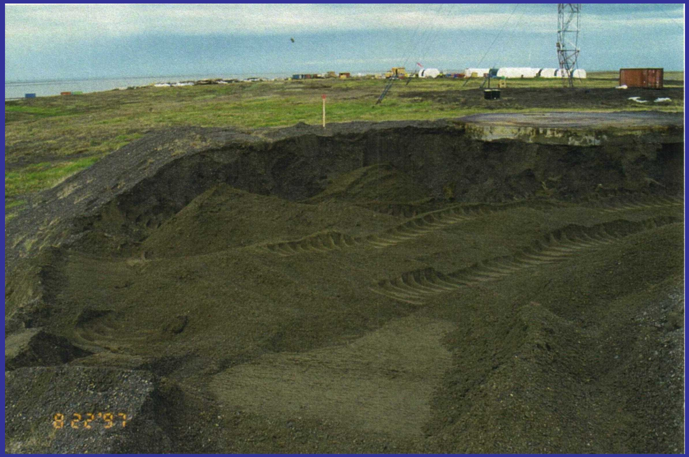


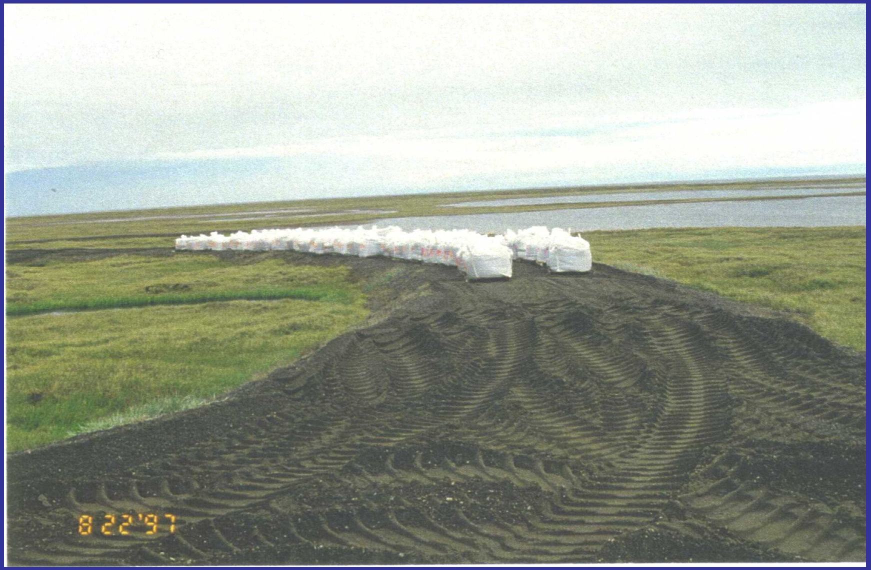


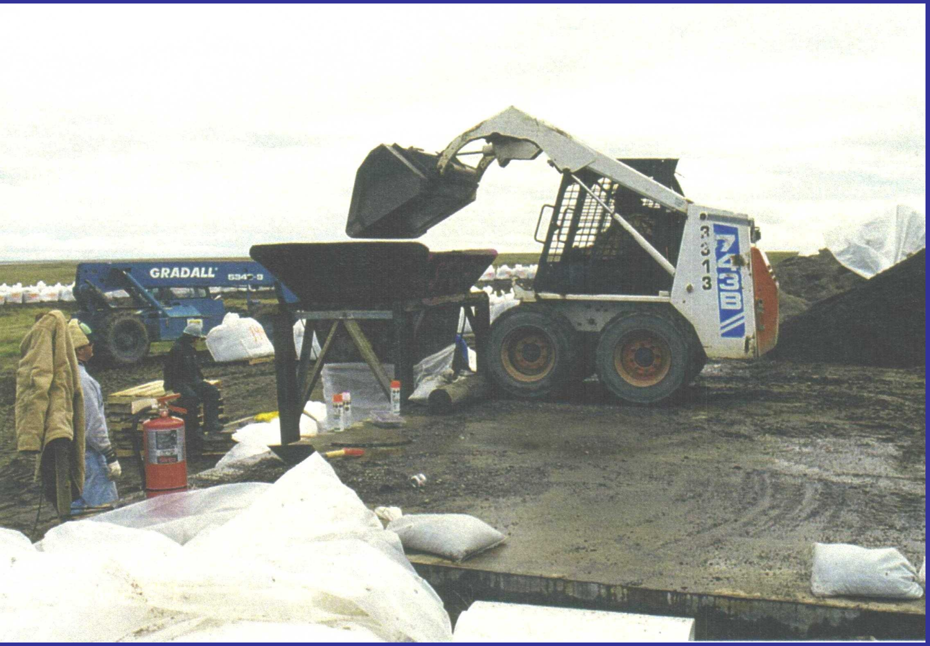


ALASKA DISTRICT

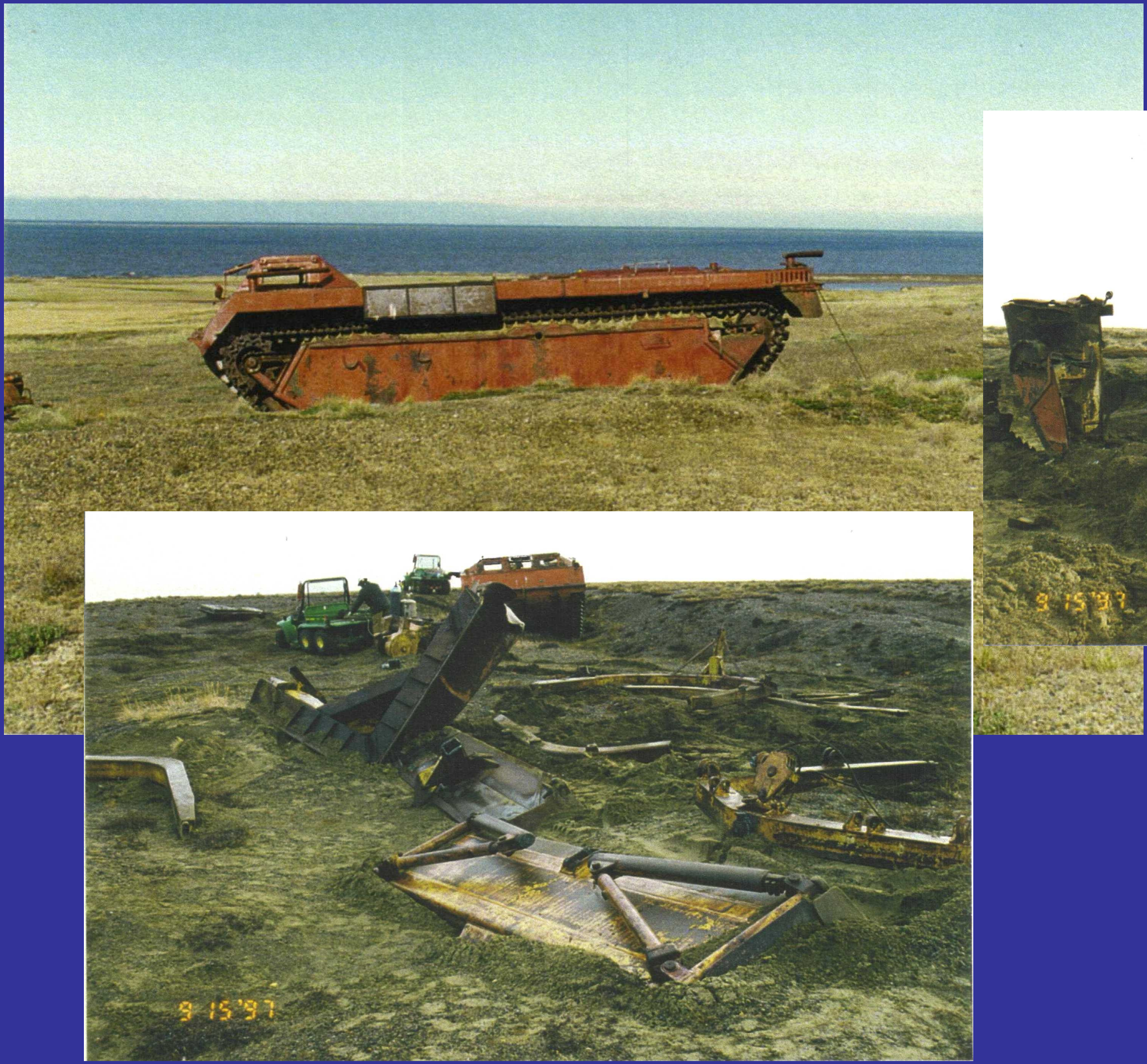
Excavating, bagging, & staging POL contaminated soil - Icy Cape DEW Line Station

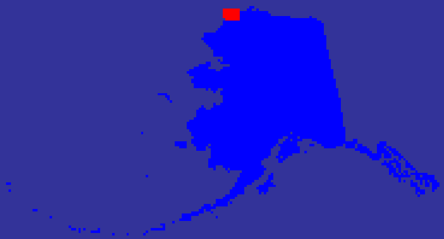





GRADALL
743B
3313

Removing track vehicle the hard way





Costs & Estimating Errors

- FY01 TO COMPLETION -- $545M
- FY84 - FY00 --$380M
- CURRENT PROJECTED TOTAL = $925M
- ANNUAL PROGRAM APPROXIMATELY $25-50 MILLION

EACH PROJECT CAN HAVE SIGNIFICANT QUANTITY CHANGES DURING REMEDIAL/REMOVAL ACTIONS DUE TO POOR ESTIMATING

Demo, remove and dispose of composite building

Nuvagapak Point DEW Line Station

- Estimated Quantity: 45 T
- Actual Quantity: 135.6 T

Collinson Point DEW Line Station

- Estimated Quantity: 45 T
- Actual Quantity: 126.2 T

Demo, remove and dispose of warehouse building

Collinson Point DEW Line Station

- Estimated Quantity: 65 T
- Actual Quantity: 32.5 T

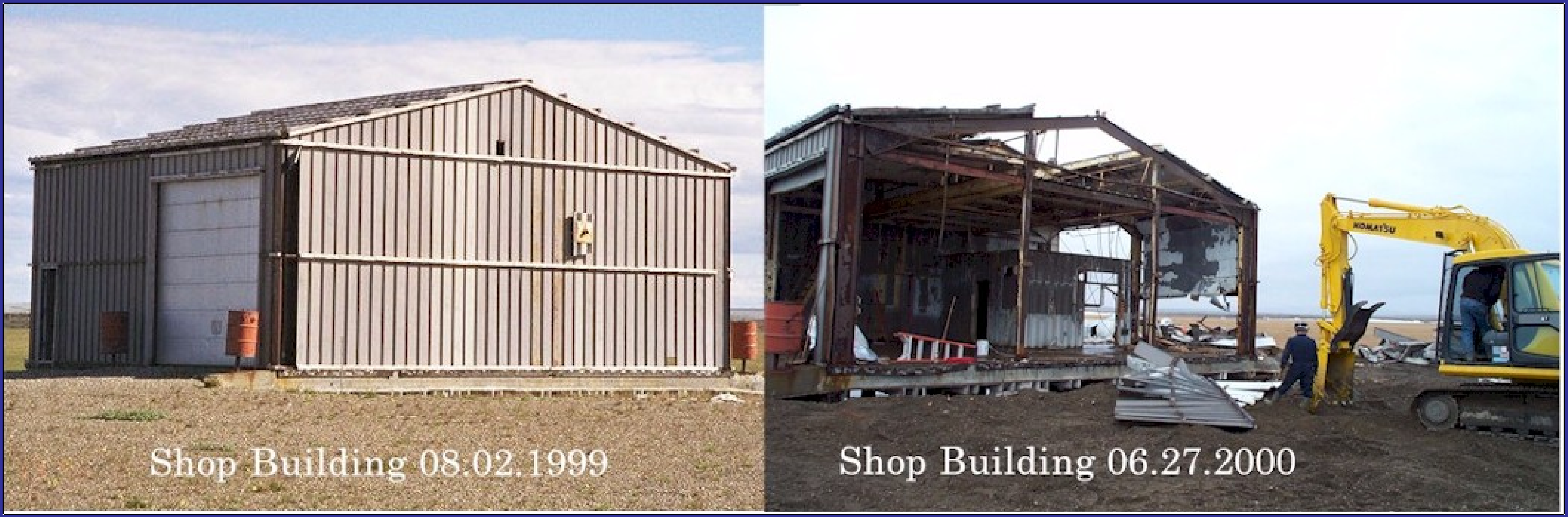
Nuvagapak Point DEW Line Station

- Estimated Quantity: 65 T
- Actual Quantity: 21.2 T

Demo, remove and dispose of shop building

Collinson Point DEW Line Station

- Estimated Quantity: 65 T
- Actual Quantity: 30.4 T



Shop Building 08.02.1999

Shop Building 06.27.2000

Demo, remove and dispose of pumphouse building & specified debris

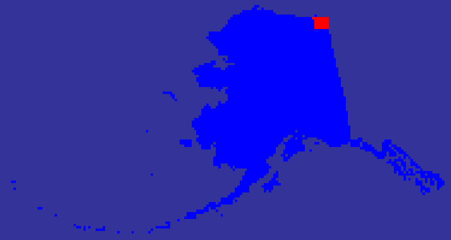
Collinson Point DEW Line Station

- Estimated Quantity: 45 T
- Actual Quantity: 110.4 T

Miscellaneous debris and equipment

Nuvagapak Point DEW Line Station

- Estimated Quantity: 27 T
- Actual Quantity: 165 T



Demo, remove and dispose of tower

Nuvagapak Point DEW Line Station

- Estimated Quantity: 28 T
- Actual Quantity: 45 T

Collinson Point DEW Line Station

- Estimated Quantity: 64 T
- Actual Quantity: 42 T

Abate, remove and dispose of friable ACM

Collinson Point DEW Line Station

- Estimated Quantity: 40 T
- Actual Quantity: 9.2 T

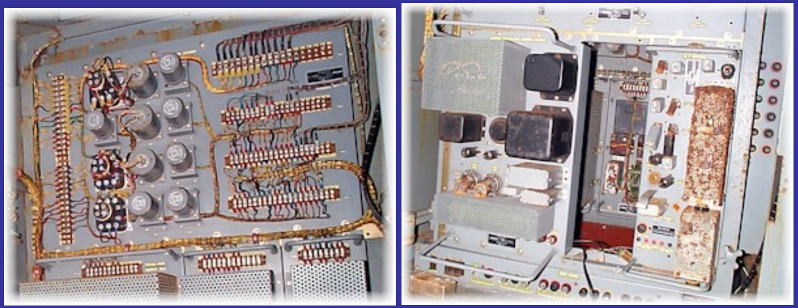
Nuvagapak Point DEW Line Station

- Estimated Quantity: 36 T
- Actual Quantity: 7.6 T

Removal of PCB containing electrical equipment

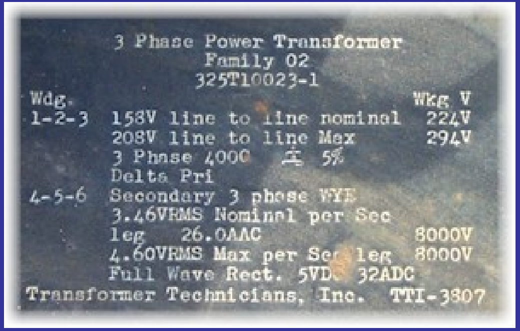
Collinson Point DEW Line Station

- Estimated Quantity: 7,100 pounds
- Actual Quantity: 5,310 pounds



Nuvagapak Point DEW Line Station

- Estimated Quantity: 7,100 pounds
- Actual Quantity: 4,040 pounds



```
                3 Phase Power Transformer
                        Family 02
                       325T10023-1
Wdg.                                          Wkg V
1-2-3   158V line to line nominal              224V
        208V line to line Max                  294V
        3 Phase 4000  ±  5%
        Delta Pri
4-5-6   Secondary 3 phase WYE
        3.46VRMS Nominal per Sec
        leg    26.0AAC                         8000V
        4.60VRMS Max per Sec leg               8000V
        Full Wave Rect. 5VDC 32ADC
Transformer Technicians, Inc.  TTI-3807
```

Cost Growth

Collinson Point Final Remediation Cost - 2000

- Actual Amount Spent: $ 2,280,516
- Original Contract Amount: $ 1,941,311
- Variance: $ 339,205 (+17.5%)

- Total Cost to Date (demolition): $4.02 Million
- Estimated Cost to Construct: $11 Million in 1950’s $$s

Nuvagapak Point Final Remediation Cost - 2000

- Actual Amount Spent: $ 2,540,460
- Original Contract Amount: $ 1,832,765
- Variance: $ 707,695 (+38.6%)

- Total Cost to Date: $4.47 Million
- Estimated Cost to Construct: $11 Million in 1950’s $s

Recognition

Contributors:

- Hank Rominski
- Marlowe Dawag - NWS
- Steve LeClerc
- Gerry Holland
- Ron Pflum
- OHM (IT)
- EMCON (IT)
- AMAN Environmental
- Nugget Construction Inc.

References

Engineering in the Far North – A History of the U.S. Army Engineer District in Alaska; Lisa Mighetto, Carla Homstad, Historical Research Associates, Inc., 1997.

Top Cover for America – The Air Force in Alaska 1920-1983; John Haile Cloe and Michael F. Monaghan, 1984.

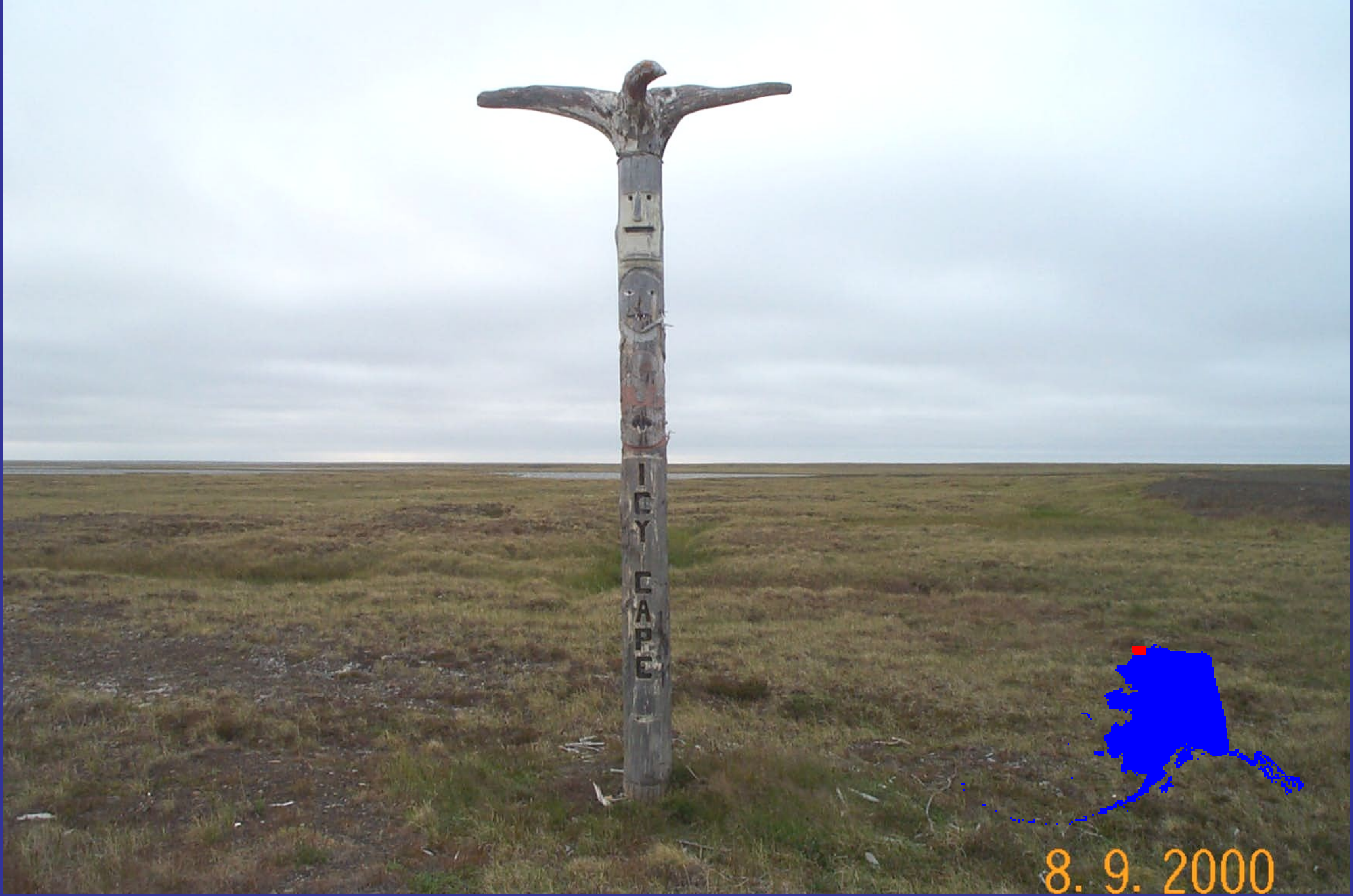
A Special Study of the Sale of the White Alice Communication System; Office of Air Force History.

The forgotten war: a pictorial history of World War II in Alaska and northwestern Canada; Stan Cohen, 1981.

ALASKA DISTRICT

Sunset at Nuvagapak Point

The only item left standing at Icy Cape


ICY CAPE
8. 9. 2000